



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



**CARIBBEAN FOOD
CROPS SOCIETY**

49

**Forty-ninth
Annual Meeting 2013**

**Port of Spain, Trinidad and Tobago
Vol. XLIX**

PROCEEDINGS
OF THE
49TH ANNUAL MEETING

Caribbean Food Crops Society
49TH Annual Meeting
June 30 – July 6, 2013

Hyatt Regency Hotel
Port of Spain, Trinidad and Tobago

“Agribusiness Essential for Food Security: Empowering Youth and
Enhancing Quality Products”

Edited
by
Wanda I. Lugo, Héctor L. Santiago, Rohanie Maharaj, and Wilfredo Colón

Published by the Caribbean Food Crops Society

ISSN 95-07-0410

Copies of this publication may be obtained from:

Secretariat CFCS
P.O. Box 40108
San Juan, Puerto Rico, 00940

or from:

CFCS Treasurer
Agricultural Experiment Station
Jardín Botánico Sur
1193 Calle Guayacán
San Juan, Puerto Rico 00936-1118

Mention of company and trade names does not imply endorsement by the Caribbean Food Crops Society

The Caribbean Food Crops Society is not responsible for statements and opinions advanced in its meeting or printed in its proceedings; they represent the views of the individuals to whom they are credited and are not binding on the Society as a whole.

MARKET INFORMATION DELIVERY: DETERMINATION OF THE MEDIA AND THE FREQUENCY PREFERRED BY CROP FARMERS IN TRINIDAD AND TOBAGO

N. Felix, G. Seepersad, and A. Iton. Department of Agricultural Economics and Extension, The University of the West Indies, St. Augustine, Trinidad and Tobago

ABSTRACT: Agricultural Market information provides farmers with vital data which can improve their competitiveness, productivity and ultimately improve food and nutritional security in a country. Various worldwide agricultural market information systems provide a wide range of information to its users, but focuses on the delivery methods. Delivery methods increase in importance in Asian and Sub-African countries where many constraints exist, such as distance to market, access to mobile services and the availability of electricity. Although Trinidad and Tobago has an abundance of energy resources, information media and mobile networks, farmers could still be disadvantaged in the method used to disseminate market information. In addition, receiving market information at a frequency unsuitable to its users decreases the effectiveness of such information. Currently, domestic crop wholesale market prices are provided daily and monthly, via the internet and short message services (SMS), but the use among farmers have been shown to be approximately 44%. Therefore, this study sought to identify the media preferred by farmers and the frequency at which this information should be delivered. A structured questionnaire allowed the study to identify the preferred frequency and the media for the delivery of market information. The Chi-square model was also employed to identify if any significant relationships existed between the demographical characteristics of farmers, the media they preferred, and the frequency of delivery. The study found that print media was most preferred among crop farmers and information should be delivered on a daily basis. It should be noted that the media and frequency differed according to the type of information farmers required. The results of the study can guide policy makers in the development of a more effective market information system.

Keywords: Media, Agricultural Market Information, Log linear, Frequency.

Introduction

The facilitation of market intelligence has been highlighted as one of the constraints of development in the CARICOM region by former President Bharrat Jagdeo of Guyana (Bulletin no. 8, 2007). Worldwide institutions provide market intelligence to enhance competition by removing information asymmetry or increasing transparency among stakeholders in the agricultural sector (Tollens, 2002). Information asymmetry refers to the imbalance of information in markets, where one group has superior knowledge over the other which leads to markets becoming inefficient (Borooah, 2012). The reduction in information asymmetry increases this transparency by providing equal knowledge to all stakeholders in the industry.

In Trinidad and Tobago, the National Marketing and Development Corporation (NAMDEVCO) has been providing agricultural market information to stakeholders. In 1991, NAMDEVCO was created by an act of Parliament mandated to create, facilitate and maintain an environment for the marketing of agricultural produce (NAMDEVCO, 2012). The National Market Information System Trinidad and Tobago (NAMISTT) which is web-enabled market information that comprises of a website and a data collection application (NAMDEVCO, 2012). Panel 1, shows the interface of the NAMISTT website, which displays daily market price information in addition to market price reports.

Panel 1: Excerpt from NAMISTT home page.



Source: www.namistt.com

A case study on ICTs in Agricultural Extension in Trinidad and Tobago by Seepersad (2003) highlighted the market information which was collected initially: domestic wholesale prices, international wholesale prices, Barbados trade information, records of stakeholders in the industry, demographics within international markets, export trade data, the requirements for trade, and pesticides used by farmers. Seepersad (2003) showed that prices were provided daily via fax or email with a limited number being available on NAMDEVCO's website, while stakeholder contact information was provided on hard copy upon clients request.

Although the study conducted by Seepersad showed the benefit of NAMISTT, a recent investigation completed by Iton et al., (2010) highlighted that approximately 44% of crop farmers used this system. The study suggested that NAMISTT should increase the frequency of disseminating of market information to increase farmer usage. However, it has been shown in various studies that the media used to disseminate market information is also significant in increasing its use by farmers. Therefore, this study

seeks to determine the media preferred by crop farmers and the frequency at which to deliver market information.

Background

The methods of information distribution used by NAMDEVCO included telephone, newspapers, newsletters, training sessions, and television (Seepersad, 2003). Seepersad (2003) identified the main clients who benefited from NAMDEVCO's service to be farmers, fishermen, processors, and investors.

A progress report provided by the Caribbean Network for Integrated Rural Development (CNIRD) finding revealed that NAMISTT's website was being utilized by farmers and exporters. However, Iton et al., (2011) in an investigation of user perspective of NAMISTT found that less than 10% of farmers used the website to receive information, while print media was used by 58%. The website was mainly used by supermarkets while hotels, supermarkets and the general public used print media also. This study also revealed that farmers had three main sources of information: (i) Other farmers, (ii) Farm shops, and (iii) Market visits, ranking 1st, 2nd, and 3rd, respectively. Newspaper which falls in the category of print media, was ranked 5th, indicating that either farmers collect information other than market information or do not use NAMISTT as their main source.

Ragbir and Avinash (2011), stated that NAMDEVCO currently continues to provide mainly price and volume market information on a range of commodities with the exception of livestock. This information is made available via bulletins mainly, while digital billboards are used for price information and advertisements. Daily and weekly modal, minimum and maximum prices are displayed on NAMDEVCO's website (NAMISTT). The company also broadcasts a weekly advertisement in newspapers to make consumers aware of the retail prices at municipal and supermarkets. Price information can also be accessed through an SMS service at a cost, while historical data on prices and volumes are being provided upon request.

In a study of sub-Saharan Africa (SSA), Tollens (2006) identified that information asymmetry occurred especially among poor farmers in remote areas, who lacked the finance to purchase cell phones along and internet (Kizito, 2011). However, it was shown that the presence of cell phone networks influenced the reception of improved market information. In addition, the reduced cost of acquiring cell phones has allowed MIS agencies to reach more farmers through Short Message Services (SMS). This was supported by a study done by Aker (2009) in Niger, who also found that cell phones were a low cost and effective method of providing information which led to the reduction in the dispersion of grain prices.

Shepherd (2011) have shown that MIS tends to focus attention on collecting large quantities of data but fails in the dissemination of information to farmers, resulting in an ineffective service. Market price and volumes change each day of trade and therefore must be collected at regular intervals to provide a correct representation of the market and also for accurate planning. Forecasts are used to plan production and inaccurate

current data can negatively impact forecasts. This indicates the importance of the delivery of current and updated information.

Shepherd (2011) showed that prudence must be taken in the method of disseminating information to ensure that farmers would be able to access it and therefore use it. Literacy levels must be accessed to ensure that the cost of disseminating information is not lost, for example, sending price and volume data on print media when farmers are illiterate (Kizito, 2011).

In the dissemination of Market Information, providers in Sub-Saharan Africa use mainly bulletins to reach farmers considering it as an efficient method to reach large masses and at a low cost; however, this has its limitations in the types of information presented in this form (Kizito, 2011). It has its advantage in areas where farmers can't afford modern ICT and electricity thus preventing information flow through radio and television programs.

Chomba et al., (2002) has shown that farmers prefer to get information from extension officers in Zambia, since the high cost of radio discouraged small farmers from its use. Shepherd (2011) showed that farmers also used traders and other farmers as sources of market information, but these sources were shown to be inefficient. Farmers only remembered how much money they received but could not recall the price received per unit, while traders who visit the market daily can misinform farmers with lower prices than what currently exists, increasing their profits.

Through radio programmes, farmers also receive market information. These programmes have been shown to be an effective method to reach farmers, since they can listen daily (Chomba et al., 2002). Information is also spread through television via one minute broadcast which include daily and weekly bulletins. Both these methods have the ability to reach a large number of farmers but are costly and only available at specific times of the day which can be a major determinant.

Modern ICT was shown to be used more by private service providers while little use was found among public MIS (Kizito, 2011). Both market information system providers in Kenya and Malawi mostly rely on cell phones to pass on information to farmers. The range, speed and decreasing cost have increased cell phones popularity among providers as an efficient system for this purpose (Staaaz et al., 2011).

Materials and Methods

Study Group: A total of 202 crop farmers were interviewed at farmers market located throughout the country during 2012. Crop farmers were selected because they represented the largest population (73%) of farmers in Trinidad and Tobago, shown by the 2004 Trinidad and Tobago Agricultural Census (GOTT, 2004).

Convenience sampling was used, for ease of collecting statistical data (Convenience sampling, 2012). Convenience sampling is defined as a non-probability sampling technique through which respondents are selected due to their accessibility and

proximity to the researcher or enumerators. For this study, Farmers' Markets are defined as regulated places of trade where only farmers are allowed to sell their harvested crops. These are located only in Trinidad and such Tobago was excluded from the study. It is anticipated that this method will not bias the study because farmers from various locations in Trinidad visit these markets to sell a range of fruits and vegetables.

Enumeration was conducted during the times when Farmer Markets were in operation. This was done for the ease of capturing as many farmers as possible. It should be noted that, some crop farmers who did not have produce to trade during the period the survey was conducted would not have been captured.

A structured questionnaire was used for the study for respondents to identify the importance of Domestic Market Prices and Volumes, their frequency and their mediums preferred. Market information from which farmers were asked to select a preferred frequency and media were (i) Domestic Market Prices and (ii) domestic market volumes, since these are currently supplied by NAMDEVCO.

This study provided five options for the importance of market information, seven options for the frequency of dissemination and four options for the type of media. These options are listed below:

- (v) Importance of Market Information:- Unimportant, Low, Moderate, Important and Very Important
- (vi) Frequency within a week:- 1 day, 2 days, 3 days, 4 days, 5 days, 6 days, and 7 days
- (vii) Choice of media:- Print/Paper, Wireless/ electronic devices, Person to Person and Modern ICT

Likert scales: Likert scales use fixed choice response formats and are designed to measure attitudes or opinions McLeod 2008. These scales allowed respondents to indicate the importance of Domestic Market Prices and volumes, this ranged from being unimportant to very important. The five point scale was used in this study since Garland (1991) showed evidence that the exclusion of the midpoint value resulted in distortions in results. For each score on the Likert scale, a value is allocated which indicated its value to farmers, these values ranged from zero (0) to four (4), shown in table 1.

Table 1: Likert Scale ranking used in the study

Label (level of importance)	Value used for
Unimportant	0
Low importance	1
Moderate importance	2
Important	3
Very Important	4

Chi Square

In this study, the choice for the frequency of information's delivery and medium can be specified to groups which share similar demographics such as age, and education level, therefore, the Cross Tab analysis in the Statistical Package for Social Sciences (SPSS) was used. This allowed the explanation of what type of relationship existed between the variables frequency of information delivery and medium preferred by farmers as well as the demographic variables.

To test the significance of the relationships the Chi Square (X^2) test was also used which allows for the examination of the differences between two groups. If the difference is found to be significant, the differences between the two populations are not due to chance. This significance would be shown if the p-value is less than or equal to 5%.

The Chi Square (X^2) statistic was used to investigate whether distributions of categorical variables differ from one another within the model, by testing the difference between the actual sample and another hypothetical distribution.

The X^2 is shown below:

$$X^2 = \sum [(o-e)^2/e]$$
$$Y_{i=1} = \beta_0 + \beta_1 X_1 + e_i$$

Where,

Y = dependant variable

X = independent variables

o = observed values

e = expected values

Log linear Model

In this study, the Log linear was used to identify the frequency at which farmers wanted to receive Domestic Market Prices and volumes with respect to its importance and the media used. The Log linear model originates from the elasticity (β_2) of Y with respect to X in (1), which is the percentage change in Y given a small change in X. The Log linear model is expressed in model (2).

$$\ln Y_i = \ln \beta_1 + \beta_2 \ln X_i + u_i \dots \dots \dots (1)$$

$$\ln Y_i = \alpha + \beta_2 \ln X_i + u_i \dots \dots \dots (2)$$

The approach to Log linear modelling was utilized since it allows for the interaction of more than two categorical variables and also the effects of the variables (Rosenfeld M. J. 2002, 1). This model is called the saturated model since it includes all effects from the categorical variables, shown in model 10. These categorical variables would be importance of information, preferred medium, and the frequency of dissemination.

$$\text{Ln}(F_{ijk}) = \mu + \lambda_i^A + \lambda_j^B + \lambda_k^C + \lambda_{ij}^{AB} + \lambda_{ik}^{AC} + \lambda_{jk}^{BC} + \lambda_{ijk}^{ABC} + \text{error} \dots (3)$$

Where,

$\text{Ln}(F_{ijk})$ = the log of the expected cell frequency of the cases of cell ijk in the contingency table

μ = the overall mean of the natural log of the expected frequencies

λ_i^A , λ_j^B , and λ_k^C = the main effects for variables A, B, and C

λ_{ij}^{AB} , λ_{ik}^{AC} , λ_{jk}^{BC} , and λ_{ijk}^{ABC} = the interaction effect for variables A, B and C

i , j , and k = categories within the variables

The relationship between the three categorical variables (λ_{ijk}^{ABC}) were analysed to identify their statistically significant combinations with the variables (i) ranking of information, (ii) media chosen, and (iii) the frequency of delivery.

Strengths

Likert Scale

Bertram (2012) stated that the strengths of the Likert scale was a result of its simplicity in construction, reliability in the scale and ease of use among survey respondents.

Chi-Square

The chi square can be used with categorical data, to show if there is any difference between two or more groups to allow assumptions about the population (Plant and Soil Sciences eLibrary 2012).

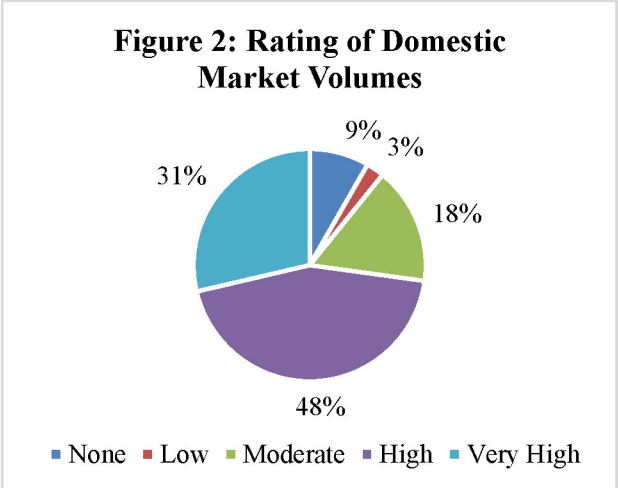
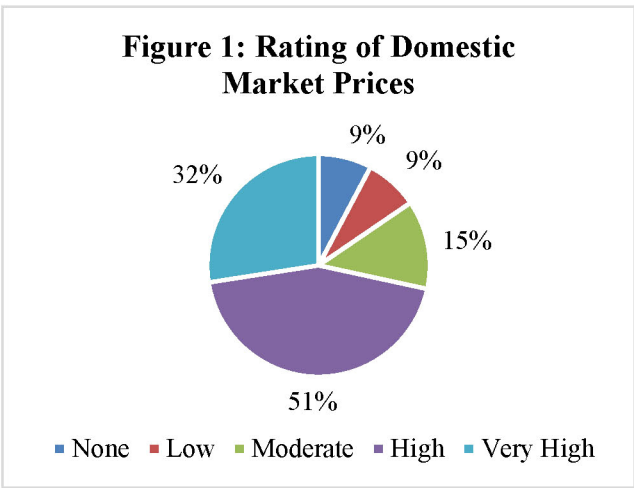
Log linear

As it was stated by Rosenfeld (2002) the Log linear provided the addition of more variables and allowed for more control over the interaction of these variables. It can be extended to complicated contingency tables, such as, 3 x 3 and 4 x 4 providing linear values which allow for more complex analyses (VassarStats, 2012).

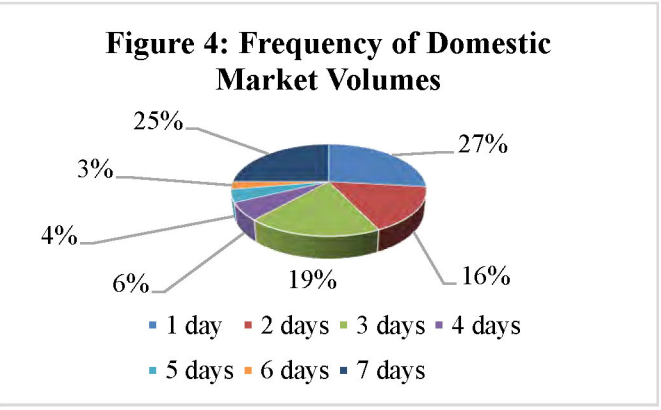
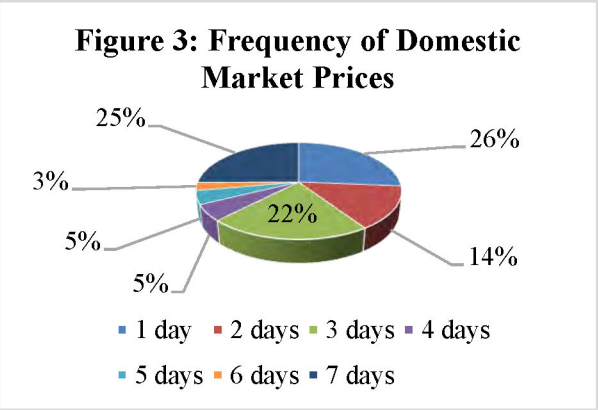
Results

A total of 202 farmers were interviewed and the results showed 42.6% of the population were 36-50 years of age, 29.7% were over the age of 50, 14.9% were aged 26-35 years, 11.4% were 19-25 and 1.5% were under 18 years. A total of 51% of the sample attended secondary schools, 27% reached the primary school level, and 19% with Tertiary level education whereas 3% did not attend school. With regards to the area of land cultivated 65% of the farmers cultivated 2-10 acres, while 22% had farms less than 2 acres. The remaining 13% were large farmers cultivating more than 10 acres of land.

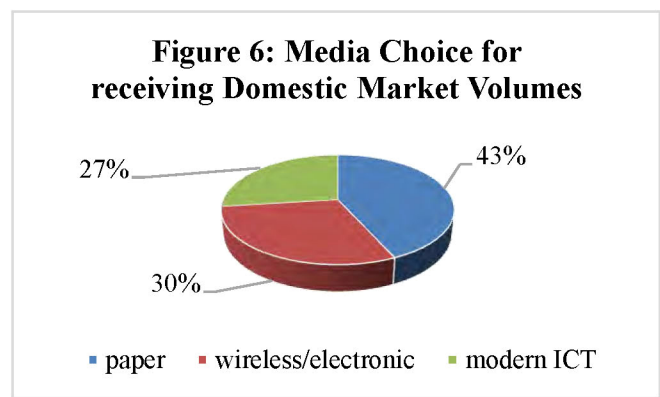
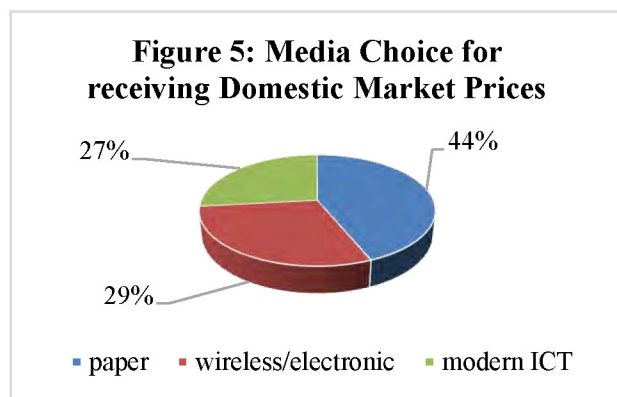
The results from the Likert scale showed that farmers identified Domestic Market Prices and volumes to be important to their operations, but Domestic Market Prices received this rank by a larger population of farmers (Figures 1 & 2).



The results of the study showed that 26% of respondents choose to receive Domestic Market Prices once a week, while 25% choose seven days a week (Figure 3). In reference to domestic market volumes, 27% of farmers selected one day a week, which was followed by 25% who choose seven days a week (Figure 4).



In the choice of media, 44% of the farmers choose paper for Domestic Market Prices followed by 29% opting for wireless/electronic devices (Figure 5). A total of 43% choose print media for domestic market volumes and 30% selected wireless/electronic devices (Figure 6).



Demographics and its Relation with the Frequency of Dissemination

Area cultivated was shown to be significant by the chi-square with a p-value of 0.042 for only the choice among farmers for domestic market volume information. Farmers who cultivated less than 2 acres and between 6-10 acres preferred to receive this information once a week, while those who cultivated 2-5 acres selected 3 days a week. However, large farmers (>10 acres) wanted this information daily.

Demographics and its Relation with the Choice of Media

Using Cross tabs it was shown that the choice of media for Domestic Market Prices was related to the age ($X^2=29.568, p=0.003$), and educational levels of farmers ($X^2=21.271, p=0.012$). These factors were also related to the choice of media for domestic market volumes shown by $X^2=31.092, p=0.013$ for age, and $X^2=24.560, p=0.017$ for educational level.

In the choice of the media to receive Domestic Market Prices, paper was the main choice among the respondents aged 19-25 yr, and 50 yr and older, while farmers between the ages of 26 and 35 years of age preferred modern ICT. Farmers aged 36-50 yr were also shown to be indecisive in one choice of media, since paper and wireless devices had equal choices within this age group. Farmers who attained a secondary level preferred paper while primary educated farmers choose wireless/ electronic devices. Farmers who attained a tertiary education were shown to either prefer paper or modern ICT.

Farmers aged 36-50 yr choose wireless devices to receive domestic market volume information, while paper was selected by those between the ages of 19-25 yr and 50 yr and over. To receive volume information, primary educated farmers choose wireless devices, while those who attained a secondary education preferred paper. Tertiary educated farmers showed an equal majority choice for both paper and modern ICT in receiving this information.

Frequency of Market Information by a Preferred Media

There were only significant 3 x 3 relationships among the importance of Domestic Market Prices, the method preferred for its delivery and the frequency at which this information should be delivered. It was shown that for daily delivery of Domestic Market Prices modern ICT was preferred by farmers, while print media was selected for the dissemination of this information at a frequency of three (3) days a week ($\exp(\lambda) = 0.07$). This meant that most of the crop farmers who ranked as being “important”, did not prefer to receive this information through those media and at the afore mentioned frequencies.

Conclusion

The results indicate that NAMIS current focus on daily dissemination of price information using modern ICT was not the best method of serving the needs few crop internet. Given the low odds ratio of 0.07 meant that this relationship only existed among the minority of the sample. Print media was shown to be the main choice by crop farmers with this information being delivered daily.

The study revealed that domestic volume data which is currently disseminated once monthly is not meeting the needs of the crop farmers, since they preferred this information daily and on print media. These choices were in relation to their ages, and educational levels, while a relationship was shown between the frequency for information dissemination and the farmers’ cultivated acreage.

It is recommended that NAMISTT use the results of this study to improve their service to crop farmers. In addition, the delivery of information and the media used can be customized by farmers’ age and cultivated area/ farm size further supplying their needs. It is also recommended that other CARICOM member states employ the methodology of this study in the operation and formation of their Agricultural Market Information Systems.

References

- Aker, Jenny C. 2009. Information from Market Near and Far: Information Technology, Search Cost and Grain Markets. Accessed May 5th 2012. http://sites.tufts.edu/jennyaker/files/2010/09/aker_nigercell.pdf
- Borooah, Vani K. 2012 Information Asymmetry. Teaching Material for Business Economics. Accessed May 21st. <http://www.borooah.com/Teaching/Business%20Economics/Information%20Asymmetry.pdf>
- Chomba, Geoffrey, Green Mbozi, David Mundia, Mike Simpamba, Billy Mwiinga, Cynthia Donovan and Stanley Mushingwani. 2002. Improving The Transfer And Use Of Agricultural Market Information In Zambia: A User Needs Assessment. Working paper No. 6. Food Security Research Project, Lusaka, Zambia.
- Conveniencesampling.net. 2012, Understanding the Basics of Convenience Sampling. Accessed June 25th, <http://www.conveniencesampling.net/>
- Government of Trinidad and Tobago (GOTT), 2004. Agricultural Census 2004. Release of preliminary results, Crow Plaza 27th April 2004. Accessed July 1st 2012. <http://www.cso.gov.tt/files/statistics/2004%20AGRICULTURAL%20CENSUS%20Preliminary%20Results%20Presentation.pdf>
- Iton, Ardon, Andrea Simon and Kalita Khan. 2010. The Trinidad and Tobago National Agricultural Market Information System: A preliminary investigation from a user's perspective. Presented at the Market Information Organization of the Americas conference 2010, Trinidad and Tobago.
- Iton, Ardon. 2011. Agri-food Value Chain Development and Market Information Systems in the Caribbean, presented at the 29th West Indies Agricultural Economics Conference, St. Vincent and the Grenadines.
- Kizito, Andrew M. 2011. The structure, conduct, and performance of agricultural market information systems in Sub-Saharan Africa. Michigan State University.
- Ragbir, Prakash and Avinash Ali. 2011. The NAMDEVCO experience. Accessed June 5th. http://www.unctad.info/upload/SUC/MIS_Caribbean_Feb11/Tuesday/Namdevco_Presentation_en.pdf
- Shepherd, Andrew W. 2011. Understanding and using market information. Market Linkages and Value Chains Group Rural Infrastructure and Agro-Industries Division. Food and Agricultural Organization of the United Nations (FAO UN).
- Seepersad, Joseph. 2003. Department of Agricultural Economics and Extension University of the West Indies, Trinidad and Tobago. Case Study on ICTs in Agricultural Extension in Trinidad and Tobago. Prepared for CTA's ICT Observatory 2003 "ICTs-transforming agricultural extension" Wageningen, 23-25 September 2003.
- Statz, John M, Andrew M. Kizito, Michael T. Weber, and Niama N. Dembele. 2011. Evaluating the Impact on Market Performance of Investments in Market Information Systems: Methodological Challenges. Department of Agricultural, Food and Resource Economics, Michigan State University.
- Technical Information Bulletin no. 8 2007. The Jagdeo Initiative, Private Sector Commission of Guyana Ltd.

- The National Agricultural Marketing and Development Corporation (2012) Profile. Accessed November 21st 2012. <http://www.namdevco.com/>
- Tollens, Evans. 2002. Market Information Systems in Liberalized African Export Commodity Markets: The Case of Cocoa and Coffee in Cote D' Ivoire, Nigeria and Cameroon. Working Paper 2002/71. KatholiekeUniversiteit Leuven Faculty of Agricultural and Applied Biological Sciences
- Tollens, Eric F. 2006. Market Information Systems in sub-Sahara Africa Challenges and Opportunities. Catholic University of Leuven (K.U.Leuven), Faculty of Bioscience Engineering, Centre for Agricultural and Food Economics, W. de Croylaan 42, 3001 Leuven, Belgium.

Appendix

Frequency preferred for the collection Domestic Market Prices by farmers

Days per week	Percent
1 day	0.26
2 days	0.14
3 days	0.21
4 days	0.05
5 days	0.04
6 days	0.03
7 days	0.25
Total	1.00

Frequency preferred for the collection Domestic Market Volumes by farmers

	Percent
1 day	0.27
2 days	0.16
3 days	0.19
4 days	0.06
5 days	0.04
6 days	0.03
7 days	0.25
Total	1.00

Media preferred for Domestic Market Prices by farmers

	Percent
Paper	43.75
wireless/electronic	29.46
modern ICT	26.78
Total	100.0

Media preferred for Domestic Market Volumes by farmers

	Percent
Paper	23.8
wireless/electronic	16.3
modern ICT	14.9
Total	100.0

Relationship between Age of farmers and Media preference for Domestic Market Prices

Media	age					Total
	<18yrs	19-25yrs	26-35yrs	36-50yrs	>50	
Paper	1	9	5	20	14	49
wireless/electronic	1	1	6	20	5	33
modern ICT	0	7	9	10	4	30
N/A	1	6	10	36	37	90
Total	3	23	30	86	60	202

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.568	12	.003

Relationship between Educational level of farmers and Media preference for Domestic Market Prices

	Education level				Total
	primary	secondary	tertiary	never attended school	
Paper	10	28	11	0	49
wireless/electronic	11	18	4	0	33
modern ICT	2	17	11	0	30
N/A	32	41	13	4	90
Total	55	104	39	4	202

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.271	9	.012

Relationship between Age of farmers and Media preference for Domestic Market Volumes

	age					Total
	<18 yr	19-25yr	26-35yr	36-50yr	>50	
Paper	1	9	5	19	14	48
wireless/electronic	1	1	6	20	5	33
modern ICT	0	7	9	10	4	30
N/A	1	6	10	38	37	90
Total	3	23	30	86	60	202

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.092	16	.013

Relationship between Educational level of farmers and Media preference for Domestic Market Volumes

	Education level				Total
	primary	Secondary	tertiary	never attended school	
Paper	9	28	11	0	48
wireless/electronic	11	18	4	0	33
modern ICT	2	17	11	0	30
N/A	33	41	13	4	90
Total	55	104	39	4	202

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.560	12	.017

Relationship between acreage under cultivation by farmers and Media preference for Domestic Market Volumes

	<2 acres	2-5 acres	6-10 acres	>10 acres	Total
1 day	9	6	13	2	30
2 days	2	7	8	1	18
3 days	1	11	7	2	21
4 days	1	5	1	0	7
5 days	0	0	3	2	5
6 days	0	1	2	0	3
7 days	5	9	7	7	28
N/A	26	27	24	13	90
	44	66	65	27	202

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.388	21	0.042

Table A2. Frequency for the collection market information

Rank	Market Information	Timing	Medium	λ	exp (λ)	p-value
High	Domestic market prices	Daily	Modern ICT	-2.622	0.07	<1%
High	Domestic market prices	Three days	Print media	-2.622	0.07	<1%