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Confronting a Global Pandemic: Responses from Caribbean Extension Service Providers

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Abstract

Agricultural Extension is an essential service, and this was even more so highlighted in this global pandemic which has significantly affected the agricultural sector. This rapid research sought to assess the capacity of Caribbean extension and advisory service providers. Seventy extension service providers from 11 Caribbean countries responded to an open-ended questionnaire administered via the Survey Monkey platform. The findings indicated that governments played an important role in providing opportunities such as distribution of seedlings to encourage producers, and promoted backyard gardening and other programmes to ensure continuity of country's food security. Extension officers faced a number of barriers in the execution of their duties. Some of the barriers included technological barriers, limited resources, and limited mobility as a result of the necessary restrictions and in some cases psychological barriers such as the fear of contracting the disease in the execution of their duties. Officers however utilized strategies such as increased use of ICTs to train farmers and link them to market opportunities. In an attempt to increase the use of ICTs a number of challenges were highlighted. Challenges such as limited ICT resources for officers, poor connectivity in some remote areas, aged farmers literacy levels in the use of ICTs as well as access. This rapid research recommends policy development towards the increased use of e-extension with consultation among key stakeholders. This can be done on a regional basis, and eventually scaled up in an effort to further strengthen extension and advisory services globally.

Keywords: agricultural extension; Caribbean region; Extension and Advisory Services (EAS); ICTs; knowledge management

Introduction

The impact of COVID-19 was felt and continues to be felt worldwide. This global pandemic is significantly affecting every sector including agriculture. Traditionally, agriculture has contributed significantly to the economies of Caribbean countries. Plantation crops such as sugar, cocoa and bananas were exported, and contributed largely to the countries' Gross Domestic Products (GDP). To date even with diversification within the sector away from the traditional plantation crops, agriculture still makes significant contributions to GDPs ranging from 7 to 17 percent (FAO, 2019).

Additionally, a high proportion of employment in these countries come from the agricultural sector, as much as 50 percent in Haiti and ranging between 10-25 percent in the other islands (FAO, 2019). Prior to the COVID-19 pandemic, the agricultural sector in the Caribbean was already marred with a number of challenges. The extension divisions of the different countries were not without their share of those challenges, some of which include limited resources such as transportation to reach their clients, adequate financial capital and materials to successfully execute duties, a lack of specific extension policies and limited trained staff to be readily available to farmers.

The role of agricultural extension in agricultural development is important. Extension's role is fundamental in building the capacities of farmers and helping them to maintain good agricultural practices. Extension units, despite the challenges they experience in the execution of their duties, employ a number of strategies to meet the demands of producers and other clients. In the Caribbean 80% of the strategies employed, include face-to-face interaction. Some of these strategies include farmer field schools, demonstration plots, training through workshops and seminars and training and visit (Even & Nyathi, 2020).

In an effort to contain the pandemic, countries across the world, including the Caribbean employed a number of strategies including "lock down" of normal operations except in cases of essential services to contain the spread of the disease. Initially some Caribbean countries example Grenada did not recognize farming as an essential service hence; farmers were confronted with a number of challenges such as accessing their farms as many farmers live away from their farmlands. Other challenges comprise limited access to input supplies, as input supply shops were closed during these periods of lock down. Thankfully, this was rectified, and farming was placed on the list as an essential service given its role in meeting the food demand and the effects of lockdown on inter-regional trade that affected the importation of food.

According to the Food and Agricultural Organization (FAO), the spread of the COVID-19 virus has deepened the vulnerability of producers as well as other workers in the agricultural sector. The lock down did not only affect producers but also affected the work of extension officers, limiting movements in the execution of their duties. The work of extension became even more vital in reaching producers as they were now confronted with added issues such as health regulations because of the pandemic. Implementation of advisory services in the wake of the pandemic in an environment where it was predominantly through face-to-face interaction and already marred with other debilitating factors will have many challenges. Extension officers have to adapt to adhering to the safety measures implemented by government such as "lock down," while at the same time develop and utilize the best strategies to continue meeting the needs of producers (Even & Nyathi, 2020).

Purpose & Objectives

The purpose of this study was to assess the capacity of Caribbean extension and advisory service providers in response to the COVID-19 pandemic of 2020. The research sought to identify the current extension strategies utilized to assist farmers during the pandemic, to describe the barriers extension officers encountered in the execution of their duties and to make recommendations that would facilitate the delivery of extension services in light of the COVID-19 pandemic in the region.

Methods

This study was conducted with extension and advisory service (EAS) providers throughout the Caribbean during the months of April through June 2020, during the first wave of the COVID-19 pandemic. A total of seventy EAS providers inclusive of extension field officers, extension field supervisors, extension field managers, researchers and food safety personnel, with varying levels of expertise participated in this study.

A questionnaire consisting of 10 open-ended questions was administered to the sample population. The questions sought to gather responses pertaining to: (i) the current strategies being undertaken by extension in the respective Caribbean country to assist farmers in light of the COVID-19 pandemic, (ii) perceptions as to whether or not these strategies would be successful, (iii) barriers hindering or challenging the delivery of extension services within Caribbean countries during this time and (iv) perspectives from EAS providers as to the challenges they currently face in terms of delivering extension and advisory services to farmers at this time. The development of the questionnaire followed the tailored design method (Dillman et al., 2014) and was administered via the internet-based Survey Monkey program. It took approximately 7 minutes for participants to complete the questionnaire.

To identify the current extension strategies to assist farmers during this time of the COVID-19 pandemic, participants were asked to describe the strategies extension within their respective countries are undertaking and to indicate whether or not they perceive these strategies to be successful. In order to describe the barriers extension staff are facing this time which may hinder the effective delivery of services, participants were asked to describe any barrier they perceived as a hindrance. After being asked to indicate the barriers they may face, participants were also asked to recommend suitable strategies that could facilitate the delivery of extensions services during this time.

Data Analysis

This study was guided by interpretative research. Interpretative research according to Kaplan and Maxwell (1994) focuses on human sense making without predefined dependent and independent variables. The focus on human sense making for this research centered on the unfolding COVID-19 pandemic and the responses of the extension and advisory service providers.

A qualitative analysis technique was utilized to analyze the responses to the open-ended questions. This included organizing and summarizing participant responses, developing categories/ codes, and sorting information to develop themes. *In-vivo* coding was used to code the collected data, following steps prescribed by Saldaña (2011). *In-vivo* coding, according to Saldaña (2013) allows the researcher to code using the direct language of participants as codes rather than researcher-generated words or phrases. The developed themes were compared across the responses from each participating country, in order to identify

similarities, variations and outstanding comments among the participants. In reporting the findings, participant quotes were included with the relevant themes as evidentiary support. Trustworthiness and credibility of the data was established through peer review of the participants' responses and *In-vivo* coding.

Findings

Demographic Profile of Participants

A demographic profile (see Table 1) shows that the majority of participants were male (55.71%) extension field officers (65.71%), from the Caribbean country of Jamaica (32.86%) with more than fifteen years of service (30%).

Table 1

Demographic Profile of Participants

Variables		Frequency	Percentage
Gender	Male	39	55.71
	Female	31	44.29
EAS Provider Category	Extension Field Officer	46	65.71
	Extension Field Supervisor	9	12.86
	Extension Field Manager	4	5.71
	Livestock Officer	2	2.86
	Extension Director	1	1.43
	Food Safety Personnel	2	2.86
	Administrator	1	1.43
	Research Technician	2	2.86
	Irrigation Specialist	1	1.43
	Other	1	1.43
	NA	1	1.43
Years of Service	<5 years	16	22.86
	5-10 years	15	21.43
	10-15 years	15	21.43
	> 15 years	21	30.00
	NA	3	4.29
Country	Jamaica	23	32.86
	Grenada	10	14.29
	Trinidad and Tobago	7	10.00
	Guyana	6	8.57
	Dominica	6	8.57
	Antigua and Barbuda	5	7.14
	Barbados	5	7.14
	St. Lucia	3	4.29
	St. Vincent and the Grenadines	1	1.43

	Haiti	1	1.43
	Suriname	2	2.86
	NA	1	1.43

Identifying Current Extension Strategies to Assist Farmers during COVID-19

One of the questions sought to identify the extension strategies in place to assist farmers at this time. Four specific themes were revealed by participants. Participants identified (i) continued service delivery via the use of ICTs, (ii) providing incentives to encourage local production, (iii) providing timely information and (iv) linking farmers to markets (marketing support) as the current extension strategies to assist farmers during COVID-19.

Theme 1: Encouraging the Use of ICTs

The COVID-19 pandemic highlighted the usefulness of ICTs, especially in its role in agricultural extension service delivery. Given that ICTs (Information and Communication Technologies) encompasses telecommunication technologies and devices such as radios, televisions, computers, mobile phones, videos and WhatsApp, the encouraged use of these technologies to complement the traditional face-to-face extension service delivery during this time was embraced. This ensured the facilitation of continued extension service delivery throughout the Caribbean. Participants highlighted the use of mobile phones, WhatsApp and various social media platforms as the preferred ICTs tools. Although respondents indicated a few challenges relating to accessing and delivering real time EAS, the use of ICTs ensures that there is continuation of service delivery.

One participant from Jamaica indicated that "*strategies such as farmers training via WhatsApp with intention to eliminate physical farmer training, provide advice to farmers via phone calls and WhatsApp, mobile markets with different communities*" are being conducted. The officer further stated that "*these strategies help eliminate close contact and promote social distance while still improving farmer livelihood."*

Additionally, participants from Guyana highlighted the use of mobile phones as a main ICT tool of choice for the continuation of their service delivery. This was highlighted by them stating that "*farmers are contacted via telephone and in some cases the use of WhatsApp messenger to exchange photographic documents"* and by making the statement that *"extension activities are conducted via the use of mobile services"*. This participant however felt that the success of this would be limited as "*many farmers are aged and tend not to be technology savvy."*

In St. Vincent and the Grenadines, social media is being used to collect and provide information to their farmers *"although face to face training activities have ceased, we are making use of social media to collect and provide information to our farmers."*

Theme 2: Providing Incentives Geared towards Encouraging Local Production

Participants indicated that measures are being taken to encourage activities geared towards increasing home/backyard gardening activities at various local levels. The provision of technical support and advice, the distribution of planting material and implementation of various government policies were discussed.

In Antigua and Barbuda, participants indicated that they *"are providing training, technical support, and also distributing seeds and seedlings to both farmers and backyard gardeners."* This is being done *"in an effort to boost local levels of production."*

Encouraging homeowners to engage in backyard gardening activities was also highlighted in Dominica, where persons have been encouraged to grow their own food which can "*reduce the need for persons to go shopping for vegetables*" thereby limiting the volume of persons being out at any given time. From the Haitian perspective, strategies have been planned on paper but not yet implemented. These strategies are "*based on promoting the production of short cycle crops such as sweet potato, corn, okra and other vegetables"* which would *"allow for food to be made available to Haitians thereby minimizing shortages in the food supplies if well implemented."*

"*Boosting local production via farmer aid programs to ensure some measure of Food Security*" was shared as the strategy of the Prime Minister of Barbados. In order to achieve this, the extension officer indicated that "*extension has been included among the Essential Service here in Barbados to ensure that our Farming Community has all the Technical Support that they will need to ensure high levels of production."*

Theme 3: Providing Timely and Useful Information

The dissemination of timely and useful information forms part of an immediate response strategy. The provision of credible information relating to farming advice and by extension the virus is a requirement, especially during this period. Extension officers in St. Vincent and the Grenadines indicated that they are *"using farm visits to provide technical advice and support while adhering to social distancing protocols."* Similarly, in Trinidad and Tobago "*teaching and knowledge sharing*" is being done while "*following health guidelines and protocols.*" The Jamaican extension service providers shared that *"farmers are still being guided with technical advice to produce the best quality for our plate, and if we have to conduct on-farm visits, it is done with minimal workers present."* Another participant from Jamaica also stated that "*keeping close contact with the farmers helps us to help the government track the availability of food supplies, and also to ensure that all is well with the farmer."*

Theme 4: Linking Farmers to Markets (Marketing Support)

Sharing technical advice is important in terms of facilitating agricultural production. However, this should be complemented by activities that would link farmers to suitable markets. Marketing support featured as another strategy being utilized especially in Jamaica, as participants identified that markets which were once easily accessed and available are no longer easily reached as before. Participants indicated that they are currently *"assisting with marketing of produce that were under contracts to hotels which may have been closed due to the pandemic."* This strategy helps farmers market their excess agricultural produce, whilst at the same time allowing them to be able to sustain their livelihood. Another participant also shared that assisting with linking farmers to markets can *"prevent farmers from going into a state of depression when their produce cannot be marketed."* Providing assistance to aid in finding markets also *"alleviates the loss of produce in ground which can cause the farmer to enter into great financial problems"* and also

facilitates "*improved distribution of fresh agricultural produce."*

Describing the Barriers Extension Staff are Facing during this Time – Hindering Service Delivery

Unprecedented changes as a result of COVID-19 has thrusted extension and advisory service providers to adapt their regular outreach to the new normal of physical distancing and noncontact communication. The use of ICTs is favored to achieve these new normal approaches, however there are some noted challenges which possibly are hindering the efficient delivery of extension and advisory services. These challenges according to the participants are (i) technological barriers, (ii) limited resources, (iii) lack of mobility, (iv) governmental restrictions and social distancing protocols and (v) physiological barriers.

Theme 1: Technological Barriers

Some of the technological barriers highlighted included the difficulties experienced by farmers in using the technology. The difficulties experienced are farmers not being up to date with the use of the technology, *"some farmers aren't technologically savvy and some do not use or have a phone so they can't be reached and if they are it takes time."* Additionally, some have difficulties transferring what they see in the field through the technology. One participant from Jamaica expressed that *"some of them are not able to fully describe what they are seeing and as a result it is difficult for the officer to know exactly what the issue is and as a result they are not able to confidently make the best recommendation due to limited information."* This in itself poses a challenge when officers are unable to adequately assist the farmer.

According to the participants other barriers relating to the use of the technology include limited access and availability experienced by both farmers and officers. *"Farmers not having access to the technology to be in the know,"* and in some instances *"farmers in remote and rural areas mostly don't have internet connection."* While officers have to contend with these difficulties experienced by farmers, they too expressed that there are inadequacies in the *"proper technology available for extension staff to carry out service delivery."*

Theme 2: Limited Resources

The extension and advisory service providers highlighted several concerns regarding the availability of resources needed to conduct service delivery at this time. These barriers, some of which were experienced prior to the pandemic, persisted during this time as officers attempted to execute their duties in more difficult circumstances. They expressed issues such as *"staff shortage"* and not being provided with the necessary tools by the ministry. According to some of the participants *"we have to use our own resources, internet, computer, phone…we are basically running agriculture with our hands tied."* Another important resource that some officers indicated were limited in some cases was the necessary protective gears for protection in instances where face-to-face interaction was necessary. *"Adequate and necessary gears and hygienic necessities for the field staff to operate are scare"* expressed a participant. Another indicated *"the ministry is too top down; extension is not institutionalized (Haiti); lack of resources (human and funds)*" made operating in this time very challenging.

Theme 3: Limited Mobility

Some officers expressed that the "lock down" implemented by governments also proved to be a major barrier. In Grenada for example, it was highlighted that *"due to the curfew situation and public transportation not in operation*" officers were *"unable to reach designated areas."* Many of the officers depend on public transportation and given the limited staffing reaching as many farmers became even more difficult. One officer stated *"there are not enough officers to execute programmes. Some are not mobile and public transport is not fully operational."* Participants indicated that it was obvious that farmers needed more support however the inadequacy in mobility made it difficult. This was compounded by the lack proper communication tools for some officers.

Theme 4: Governmental Restrictions & Social Distancing Protocols

The restricted measures and the social distancing protocols implemented by many governments across the region also impacted several businesses and their normal operations. This further affected extension service delivery. The participants indicated that governmental restrictions impacted their daily routines inclusive of their ability to deliver an extension service. *"With the 24-hour curfew in place at this time officers may be discouraged to venture too far"* a participant expressed. Given the low extension officer to farmer ratio in most of the Caribbean countries (Pemberton, 2005), officers conducted a significant portion of their work in group meetings and trainings. The necessary social distancing protocols affected the abilities of officers to account for work done. "*right now our parish is on lock down due to the number of COVID-19 cases, and also due to the social distancing requirements it is hard to get the farmers to sign the contact sheets to say you visited,"* or got work down.

Theme 5: Physiological

A barrier not to be overlooked, is the psychological difficulties associated with having to conduct duties with limited protective wear in an environment where a highly contagious disease existed. One officer indicated *"my main barrier is the fear of contracting the COVID-19. Hence, farmers are not feeling the strong and usual support from their officers."* Extension and advisory service providers may be considered as being part of the essential services and their fears of contracting this virus in addition to the other challenges they face hinders them delivering effective advisory services at this time. With the limited availability of Personal Protective Equipment (PPE), officers are uncomfortable interacting with farmers. Some indicated that given the aging population of farmers in the region, they are even more vulnerable to contracting the disease, an indication of the risk for both farmers and officers.

Recommended Strategies for Facilitating Delivery of Extension Services in Light of the COVID-19 Pandemic in the Region

Extensive adoption of digital technologies in extension and advisory services within the Caribbean region has been long overdue. The present pandemic has highlighted the need for the immediate adoption of various digital technologies as an effective regional response. The unprecedented impacts of COVID-19 has made EAS more challenging and in some cases more demanding. Accessing real-time EAS is a challenge, limited mobility, access to markets and social distancing protocols pose serious challenges to the livelihoods of Caribbean small farmers. The use of digital technologies are favored strategies,

particularly in being able to overcome the identified challenges.

The recommended increased "*use of ICTs for communications and information"* coupled with *"explaining how to work the technology"* should be considered for both extension service providers and farmers.

The existence of appropriate infrastructure, adequate mobile network coverage, prices of devices and costs of data plans also has to be factored in with the recommendations. One participant indicated that "*although we know the benefits of utilizing ICTs, and also knowing how costly it can be, it would be nice if service providers within the Caribbean can provide a mobile plan or packages at subsidized or cheaper rates that would allow farmers and extension officers to access the internet or various social platforms."* Another participant echoed this by suggesting that mobile companies make certain websites free in an effort to facilitate access. These recommendations would therefore ensure that services can be accessible and affordable.

Conclusions, Recommendations & Implications

Prior to the COVID-19 pandemic, extension services in the region were already contending with a number of challenges. The pandemic brought with it additional challenges; however, evidence suggests extension officers continue to make efforts to transfer information to producers. Officers attempted to make use of ICT platforms to continue their work despite challenges experienced because of regulatory policies put on by governments to curb the spread of the virus. They also encouraged farmers to utilize the platforms as much as possible. Officers applied platforms such as WhatsApp through group chats and through one and one communication. These platforms were also utilized for training. Notably however the use of ICTs was not all smooth sailing as a number of farmers in the region are older with lower literacy levels and experienced problems keeping up with the modern technologies and at times being unable to communicate their on-farm challenges.

Additionally, in some remote areas of some countries there were connectivity problems making it difficult for them to access information. While officers recommended that the current situation has highlighted the need for a revolution in the adoption of e-extension, they emphasized the current difficulties as the resources available to them in making full use of technological platforms were limited. COVID-19 has highlighted the importance for e-extension but it has also highlighted the current challenges both farmers and officers have in fully utilizing these platforms that have the ability to transform the flow of information among the stakeholders.

While the evidence suggested that officers made use of e-platforms, the COVID-19 pandemic has highlighted that much more needs to be done in the region. It has also drawn attention to the fact that the region is behind in being able to fully embrace e-extension. Efforts must be made to assist farmers who are struggling with the platforms and to equip officers with the necessary tools to fully utilize these platforms. This can be realized through collaborative work among key stakeholders to ensure that connectivity is available to key rural communities. The network providers must be on board with efforts. It is imperative that continuation of some of the existing strategies must continue as it will take some time given the challenges experienced by both farmers and officers. In that regard, there should be a regional effort in securing the necessary PPE for officers to use when interacting with clients, since

extension is listed as an essential service. COVID-19 has certainly reemphasized the importance of digital advisory services and the opportunity must be embraced by all stakeholders. Intervention at the policy level is necessary going forward. This is an opportunity to address the absence of extension policies in the region and capitalize on these unprecedented circumstances to make digital advisory services a regional effort. Making digital advisory services a regional effort coupled with a regional extension policy aids in the creation of a community of practice with like-minded extension professionals to foster the continued exchange of ideas. This exchange of ideas would aid in continuing to improve regional extension and advisory service delivery. The created community of practice can also be beneficial to the rest of the world in that it would contribute to the pool of knowledge and advice pertaining to extension service delivery. As such, this is an opportune time for extension units across the region to invest in knowledge management from a regional perspective.

References

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail and mixed-mode surveys: The Tailored Design method* (4th ed.). John Wiley & Sons, Inc.

Even, M. A., & Nyathi, P. (2020). *Maintaining critical extension services for smallholders during COVID-19.* https://www.ifad.org/en/web/latest/blog/asset/41957955

Food and Agriculture Organization & Caribbean Development Bank. (2019). Study on the State of Agriculture in the Caribbean. FAO & CDB. http://www.fao.org/3/ca4726en/ca4726en.pdf?eloutlink=imf2fao

Francis, D. (2020). *COVID-19 response, farmers and essential services: A perspective.* https://blog.iica.int/en/blog/COVID-19-response-farmers-and-essential-services-perspective

Kaplan, B., & Maxwell, J. A. (1994). Qualitative research methods for evaluating computer information systems. In J. G. Anderson, C. E. Aydin & S. J. Jay (Eds.), *Evaluating health care information systems: Methods and applications* (pp. 45-68). SAGE.

Pemberton, A. C. (2006). *Agricultural development and employment in the Caribbean: Challenges and future prospects*. ILO Sub-regional Office, Port of Spain.

Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). SAGE.

Saldaña, J. (2011). *Fundamentals of qualitative research*. Oxford University Press, Inc.