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Abstract

Haiti is one of the economically poorest countries in the world. As a result, billions of dollars have been invested into agricultural initiatives in Haiti, however, less emphasis has been placed on building the capacity of farmers through training and educational programs. Limited research has been conducted on barriers faced by Haitian farmers. The purpose of this study was to explore the barriers and faced by small scale farmers in the North Department of Haiti. A qualitative approach was used to achieve this purpose. Results revealed 11 major barriers, organized in the two themes of environmental challenges and resource limitations. Emergent themes included an external locus of control as a cause of barriers. Based on findings, recommendations for practice and future research are provided. Lessons learned from this research can help extensionists in Haiti and similar locations better meet the needs of farmers.

Keywords

barriers; farmer; training; Haiti; agriculture

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Abstract

Haiti is one of the economically poorest countries in the world. As a result, billions of dollars have been invested into agricultural initiatives in Haiti, however, less emphasis has been placed on building the capacity of farmers through training and educational programs. Limited research has been conducted on barriers faced by Haitian farmers. The purpose of this study was to explore the barriers and faced by small scale farmers in the North Department of Haiti. A qualitative approach was used to achieve this purpose. Results revealed 11 major barriers, organized in the two themes of environmental challenges and resource limitations. Emergent themes included an external locus of control as a cause of barriers. Based on findings, recommendations for practice and future research are provided. Lessons learned from this research can help extensionists in Haiti and similar locations better meet the needs of farmers.

Key Words: barriers; farmer; training; Haiti; agriculture

Introduction

Haiti is one of the economically poorest countries in the world (Arias, Leguía, & Sy, 2013). Extreme poverty is rampant in the nation and poverty's devastating effects reach millions of Haitians every day. In the 21st century, Haiti's poverty rate climbed to 80%, which left the majority of Haitians food insecure (United States Agency for International Development [USAID], 2011). Because agricultural development is a pre-requisite to economic and social development, the Haitian government prioritized re-launching agricultural production throughout the country (Arias et al., 2013).

As a result of the shared goal of improving the agricultural sector in Haiti, various initiatives from governments and nonprofits have emerged (Arias et al., 2013). For example, the U.S. Government's Kore Lavni Nou initiative and the Haitian Government's Aba Grangou (the presidential anti-hunger initiative) have been among the top agricultural programs in Haiti (Joseph, 2012). Both initiatives had a shared goal of providing food vouchers to families who cannot afford to purchase their own food (USAID, 2011).

Although billions of dollars have been invested into agricultural initiatives in Haiti, less emphasis has been placed on building the capacity of farmers through training and educational programs (Arias et al., 2013). Conversely, much of emphasis has been placed on offering food vouchers, credit to farmers, improving agricultural infrastructure, providing subsidized food, improving agricultural technology, or providing emergency assistance (Joseph, 2012). Because of this lack of emphasis on capacity development initiatives, limited research has been conducted on barriers faced by Haitian farmers (Joseph, 2012). The present research aimed to fill in the gap. This research focused on the barriers faced

by Haitian farmers in Haiti's North Department.

Literature Review

Agriculture was the mainstay of the Haitian economy in the late 1950s, providing employment for 80% of labor force and representing 50% of Haiti's GDP (Haggerty, 1989). As years progressed, the role of agriculture in the economy declined. By the 1980s agriculture provided only 66% of the labor force and constituted about 35% of Haiti's GDP (Haggerty, 1989). Various factors have contributed to the decline of agriculture in Haiti, including: (a) inadequate infrastructure, (b) animal and plant disease, (c) unstable land ownership, (d) low levels of agricultural technology, and (e) a lack of capital investment (Haggerty, 1989). Furthermore, there was a severe lack of attention for the agricultural sector in Haiti. Only 5% of the Haitian budget was allocated to the Ministry of Agriculture, Natural Resources and Rural Development [MARNDR] in 1989 (Haggerty, 1989).

At the heart of Haiti's agricultural sector are Haitian farmers. Over 94% of Haitian farmers are small-scale farmers who cultivate on less than two hectares of land or less (Lewis & Coffey, 1985). These small-scale farmers have been almost exclusively poly-cultural, with no single crop making up most of their total income. Some of the more popular crops cultivated by Haitian farmers include cassava, yams, maize, cabbage, mango, and banana (USAID, 2011). Farmers have plant various crops to mitigate risk, establish year-round income, and ensure soil benefits (USAID, 2011). Although farmers have planted various crops, there has been a lack of scaled production throughout the land. This means that small-scale farmers have historically remained small-scale farmers. This cycle has led to a shortage of domestically grown food (United Nations

Food and Agriculture Organization [FAO], 2014; USAID, 2011), contributing to food insecurity.

The level of food insecurity in Haiti was one of the highest in the world in 2015, with most the country's population being undernourished (FAO, 2014). Poor nutrition and hunger affected Haitians of all ages. In 2012, 11.4% of Haitian children under the age of five were underweight, and 21.9% were stunted in their growth (FAO, 2014). Surprisingly, although these statistics were high, they represented a significant decrease in undernourishment from 61.1% in the 1990s to about 50% in 2014 (FAO, 2014). Unfortunately, increased levels of development have not kept pace with population growth, and the number of Haitians in hunger increased from 4.4 million in the early 1990s to 5.3 million in 2014 (FAO, 2014). In short, Haiti has been plagued with high levels of food insecurity which has affected millions of Haitian men, women, and children daily.

Although natural disasters, such as the earthquake in 2010, have contributed to the high levels of extreme poverty in Haiti, food insecurity and agricultural underdevelopment have been identified as factors that were present in Haiti for decades before the earthquake (FAO, 2014). Even before the earthquake, farming was a weakened structure in the country, causing Haitians to import large amounts of agricultural products, most of which they once produced themselves, such as rice (FAO, 2014). According to FAO (2014), in 2010, food imports represented 44% of the total food availability. However, just three decades earlier, food imports represented only 19% of total food availability. Haiti has been heavily dependent on food imports to feed its people, which has crippled its economy and development.

Small-scale farmer in Haiti have struggled with low agricultural productivity

and an increasing population density (FAO, 2014). This struggle has attracted many government agencies and international organizations, such as USAID and the European Union, to invest in the Haitian agricultural sector (USAID, 2011). Many of the programs and initiatives, however, have indirectly crippled the agricultural development of the country (Joseph, 2012). An example of this detrimental aid was the U.S. initiative to provide subsidized rice to combat food insecurity. Because U.S. rice was cheaper than the Haitian grown rice, the American government decided to import high levels of rice at a subsidized price into the country. Unfortunately for Haiti, imports negatively impacted the Haitian rice industry. In 1998, 47% of the rice consumed in Haiti was grown domestically, but by 2008 that number had significantly decreased to 15% (Joseph, 2012). Enhancing the agricultural sector is a key to long-term reductions in food insecurity (USAID, 2011).

According to the Global Forum for Rural Advisory Services (n.d.), many projects in Haiti have targeted the agricultural sector. However, there has not been a coordinated national plan for agricultural research and extension. As a result, the Haitian government has not offered adequate support for farmers in the form of training and research. Although few nonprofits, such as Catholic Relief Services (CRS) and the Inter-American Foundation (IAF), have offered assistance in the form of farmer training, their services have been limited and selective. They often only focused on local institutions, not farmers. As a whole, trainings for farmers have not been obsolete, they simply exist in small pockets. Furthermore, Haitian farmers with larger farms have tended to receive much of the training that has been offered (Arias et al., 2013). This has left the majority of small-scale farmers without this service.

Understanding the barriers faced by these farmers can provide extensionists with valuable information on which to build capacity development programming.

There is little research about farmer needs in Haiti. One recent study focused on small-scale producers in Northern Haiti (Zeleya, Harder, & Roberts, 2016). These researchers examined farmer access to timely information. They discovered farmers used a variety of information services. However, many farmers reported a lack of access to information or a distrust for the service providers with the information. The suggested solution was to use an opinion leader model (Rogers, 2003) to build trust with small-scale farmers.

Other research in the region and developing countries did provide some additional insight. In another study conducted in the Caribbean, Roberts, Ganpat, Narine, Heinert, and Rodriguez (2015) found farmer needs varied by farm size, indicating a one-size-fits-all approach to farmer training may not be appropriate. In a different study in the Caribbean, Sandlin (2015) found farmers had been exposed to environmentally friendly farming approaches, but had not adopted those practices. When asked about their preferences from information, these same farmers preferred informal sources (Sandlin, 2015). A study in post-conflict countries in West Africa, farmers identified a lack of extension services as a barrier (Maiga, Edwards, Baker, Cartmell II, & Jenswold, 2016). These farmers thought the media could be part of the solution to their problems (Maiga, et al., 2016).

Theoretical Lens

This study used social constructivism as the theoretical lens for understanding the training needs of Haitian farmers. This framework provides guidance to developing the research methodology. In research,

social constructivism, often seeks to understand the participant's view of a particular situation (Creswell, 2012). This approach provided a pathway for the researchers to obtain a deepened understanding of the barriers faced by farmers. The social constructivist approach explores the *lived experiences* of the research subjects. The ontological belief of social constructivism is that multiple realities are based on the lived experiences and interactions among people (Creswell, 2012).

The epistemological belief of social constructivism is that reality is “co-constructed between the researcher and the researched and shaped by individual experiences” (Creswell, 2012, p. 36). As we focused on the specific social and historical context of the participant's perspectives, we made interpretations of data collected. These interpretations were shaped by their personal experiences and backgrounds (Creswell, 2012). The ultimate goal of this research was to focus on the participant's views of the barriers they face by having them describe their experiences (Moustakas, 1994). This approach is fueled by the axiological belief that the values and experiences of each individual should be honored (Creswell, 2012).

Purpose & Objectives

The purpose of this study was to explore barriers faced by small scale farmers in the North Department of Haiti. The objectives of this study were to:

1. Identify the most pressing barriers faced by farmers; and
2. Explore farmer receptivity towards receiving training.

Methodology

This study employed a qualitative approach to conduct the needs assessment (Creswell, 2013). According to Merriam

(2009), qualitative research is distinct because,

rather than determining cause and effect, predicting or describing the distribution of some attribute among a population, we might be interested in uncovering the meaning of a phenomenon for those involved. Qualitative researchers are interested in understanding how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences. (p. 5)

At the heart of the study was a desire to understand farmer's lived experiences. In order to understand how farmers interpret their experiences, we took an inductive approach. This approach allowed researchers to gather data to build concepts as opposed to working from an established theory (Merriam, 2009). A qualitative approach was especially appropriate due to the lack of research that existed in the realms of farmer training needs in Haiti.

Data was collected in the North Department of Haiti. Haiti was divided into 10 administrative departments (Pierre, Arrellano, Ramírez, Gómez, & Romero, 2014). These 10 departments are further divided into 42 arrondissements and then 140 communes. The North Department is situated on the northern coast. The North Department was selected because of its key role in the agricultural development of Haiti (USAID, 2011). According to the President of Haiti, Michel Martelly, "The North is a key region in Haiti. Working here on food security benefits the entire country" (USAID, 2013, para. 3). The importance of this region was also highlighted through the large-scale projects, such as Feed the Future North, the five-year, \$88 million project that USAID initiated (USAID, 2013). The North Department was also headquarters of the

organization which hosted this research, Projects for Haiti, Inc.

The population of this study was small-scale farmers in the North Department. In 2012, there were a reported 1,018,951 operating farms in Haiti (MARNDR, 2012). Of these farms, about 94%, or 957,814, were small-scale farmers. Although MARNDR published these facts, it did not have an accessible or complete list of farmers in the North Department. All lists from MARNDR were incomplete. One of the greatest barriers to creating a comprehensive list of farmers was financial support. In 1989 the Haitian government allocated only five percent of the national budget towards the MARNDR (2012). Since then, the national budget for agriculture has decreased. Government officials, therefore, neglected to put emphasis on creating a list. Another barrier faced by MARNDR was many farmers purposefully did not register their farms to avoid taxes. This is a common practice in various sectors within the Haitian society. Furthermore, the earthquake of 2010 shut down farms that were once registered. Although the Haitian government and other NGOs attempted to create lists of farmers in Haiti, many names were outdated or obsolete. This research therefore, did not operate from a complete list of farmers in the area.

As mentioned before, small-scale farmers in the North Department were the focus of this study. In the Cap-Haitian region of the North Department, most farms were between .25 and 0.50 hectares (Pienaar & Sacks, 2012). Large-scale farms were virtually non-existent in the North Department. A total of 28 small-scale farmers were selected from four cities known to have the highest agricultural production in the Department: Milot, Limonade, Limbe, and Grande-Riviere-du-Nord. These four cities were spread throughout the Department. A total of seven

farmers were selected from each city. Snowball sampling was used to identify the farmers selected for interviews. As mentioned previously, there was no accessible list of all farmers in the North Department, which lead us to rely on key informants to lead to more participants. A native Haitian research assistant was hired to help identify initial contacts and conduct the interviews, which help in establishing rapport and credibility with participants.

A semi-structured interview guide with 11 questions was used to collect data. Farmers were asked about farm demographics, barriers, and training needs. The first three questions inquired about farm size, crops grown, and animals on the farm. The next three questions asked about perceived barriers and perceived ways of eliminating the barriers. The next four questions asked about opinions about training and training needs. The participants were then asked an open-ended question about additional comments or concerns that they would like to make. Probing techniques and clarifying questions were asked throughout the interview process to further understand the experiences of Haitian farmers (Merriam, 2009). Data was collected orally in Haitian Creole due to the high illiteracy rates among Haitian farmers. Each interview lasted between 15-25 minutes long. All interviews took place between the hours of 7am to 12pm, Monday through Saturday. Good weather allowed all the interviews to be conducted on the farms of the participants. They were all conducted over a 6-week span during the summer months in 2015.

After the first interview, the research assistant was asked to conduct the remaining 27 interviews alone, due to high levels of distrust towards representatives of non-Haitian organizations. The research assistant was trained on best practices for conducting research and provided with an audio

recorder, a notebook, a pen, and funds for transportation. Our observations indicated farmers were more comfortable speaking with a native Haitian, as opposed to the lead researcher, a Haitian-American.

All data collected was recorded on an audio recorder. The recording began after receiving oral agreement for informed consent. The recording ended after receiving final thoughts from the participant. The audio was then transcribed and translated into an English transcript for further analysis. This transcript was peer reviewed by a native Haitian speaker for translation accuracy. After accuracy of the translation was established, a thematic analysis was used to identify themes within the interview data collected (Creswell, 2013). Open coding was used to detect themes throughout the interviews. Each line of the interview was coded based on general categories identified throughout the interviews (Merriam, 2009). Categories and subcategories were then constructed based on the codes that were identified. Analytical coding was used to interpret and reflect on the meaning of the categories identified (Merriam, 2009). Field notes were also coded in the same manner as the interviews. Throughout this process, the categories formed key themes which represented recurring patterns throughout the data (Merriam, 2009).

To further organize the data set, each farmer was assigned a code based on his or her city and when they were interviewed. The first participants in each city were assigned the number 1 and the last participants were assigned the number 7. Participants from Milot were assigned codes M1-M7, Limonade participants were assigned the codes L1-L7, participants from Limbe were assigned LB1-LB7 and participants from Grande-Riviere-du-Nord were assigned G1-G7. This coding system allowed the researcher to identify themes

that may have been due to region.

Multiple measures were taken to establish trustworthiness. The data were triangulated to increase its credibility (Lincoln & Guba, 1985). According to Lincoln and Guba (1985), "Triangulation of data is crucially important in naturalistic studies. As the study unfolds and particular pieces of information come to light, steps should be taken to validate each against at least one other source" (Lincoln & Guba, 1985, p. 283). To accomplish triangulation, the research assistant in Haiti confirmed all themes identified by the lead researcher and commented on possible other themes. Peer review of the data was also used to confirm accurate interpretations of the data. Credibility was also addressed through the use of triangulation and peer reviewing. Transferability was addressed by the thick descriptions provided in the data results section (Lincoln & Guba, 1985). Finally, dependability and confirmability were established through audit trails. Additionally, the lead researcher kept a research journal throughout data collection and analysis. This journal detailed the barriers faced and decisions made by the researchers. Also, the research assistant kept a journal with field notes that detailed answers given by participants and personal thoughts (Lincoln & Guba, 1985).

Subjectivity Statement

One of the distinct features of qualitative research is that the researcher becomes the instrument (Flick, 2009). As such, it was important that the researchers identified their biases and dispositions related to the phenomenon at hand. The lead member of the research team was a Haitian-American woman. Her background gave her a distinct perspective that influenced interpretations of statements and actions of the Haitian farmers. Experiences living and working in Haiti impacted how she

processed the findings. Although being Haitian born gave her an advantage in understanding the language and insinuations, she made it a priority to identify personal biases and preconceived notions while interpreting data.

The other two researchers were Americans and they also identified their biases in interpreting data. One of the researchers is a middle-aged white American male who has worked in agricultural development throughout the Caribbean and Latin America. At the time of this research, he had not previously worked in Haiti. The other researcher is a young white female who has worked in U.S. extension and consulted with extension systems throughout the Caribbean. They were the source of establishing dependability based on their outside perspective and expertise. They identified their biases and made it a priority to limit the impact of their biases on the interpretation of the data.

Results

Barriers

The data showed there were 11 major barriers faced by Haitian farmers in this study. These barriers were categorized into the following two broad themes *environmental challenges* and *resource limitations*. The following sections provides further information on the environmental challenges and resource limitations that negatively impact farmer productivity in the North Department.

Environmental challenges. Within environmental challenges, the top three barriers were water management, crop pests, and heat exposure. Water management was the most prevalent barrier faced by farmers. Water management was illustrated through comments such as, "There is no water...but the river is right here" (L5). Another

participant commented, “The biggest problem we have is a problem of water. We need water. We need water” (L3). Every farmer mentioned they had difficulty in finding effective ways of irrigating water. The severity of the problem could be seen through the comments of M6, who stated, “We are suffering a lot because we are living without water. If God would allow us to have a way to have water that would be best.” Overall, farmers believed they were unable to be productive because the rain did not come often, they did not know how to collect and store rainwater, and they did not know how to collect and use water from the river.

Another prominent environmental challenge faced by farmers was crop pests. Several participants commented on this barrier. One farmer said, “I have rats and other animals that come and annoy us. And ants, they are so annoying. With all these animals, I need poison to get them away” (M3). Another farmer stated, “I have a problem of rats that eat my food. I lost so much this season from rats. There is also a pest called pig of the land that is eating my profit, especially my manioc and beans. All of these pests come and invade my land. I’m in difficulty” (G6). Overall, the most prominent pests included rats, mice, crickets, worms, and ants. Some farmers did not know the name of pests and just referred to them as animals or rats.

The final prominent environmental challenge was heat exposure. One farmer said, “I have issues with the sun. Once the sun stands your land will not be good” (G1). Another farmer stated, “We are being killed with heat because of sin” (M5). Finally, another farmer illustrated the challenges of the sun by stating, “The sun was too harsh on the crops. I work so hard and invest so much but then it is all wasted.” Overall, farmers believed that the harsh heat from the sun in combination with major barriers such

as crop pests and lack of water, made farming increasingly difficult in Haiti. M6 stated, “The heat kills the food and insects come.” Additionally, L7 said, “No rain and then the sun comes and ruins the crops.”

Resource limitations. Resource limitations were a serious problem faced by Haitian farmers. The prominent resource limitations faced by Haitian farmers included economic needs, lack of support, and lack of knowledge. Most farmers commented on their economic need and their lack of support. In regards to economic needs, one participant noted, “I don’t have money to do the work effectively” (LB2). Another noted, “I don’t have the money. If you are going to cut the trees and plow the land, that is so much money” (M2). Haitian farmers overwhelmingly lacked the economic resources to purchase necessary supplies to accomplish their farmer duties. When farmers made requests for money, they often stated that they wanted money “Not as a gift, but as a loan” (LB1).

Farmers showed that their economic needs impacted more than their farming, it also impacted their daily lives and their families. G7, for example, stated, “Well, there are so many demands as a farmer. The kids need money for school, you need to eat but there is no bank I can go to get help. There’s no help.” Farmers stressed the need for money because as LB2 stated, “A lot of us need it. We have kids and some kids that want to go to university and we need money for them. We really need this money.”

In regards to support, one participant said, “We lack support” (LB7) and another said, “If we had a government that took their responsibility we would not have these problems” (LB5). Another farmer said, if I had support from people that came and visited me and gave me supplies like they do in the D.R. [Dominican Republic], I would be better off. In my area there is a large

office for the department of agriculture but they are doing nothing. (G6)

This same farmer later noted,

I'd like to say that we know that this type of work requires a lot of access to support. In a lot of countries, they give people money if they have land. They lend them money and support them in their work on the land but here in Haiti we don't have support. I would like that after the training the government or an NGO decides to support farmers. (G6)

Overall, farmers did not feel like the government, NGOs, or their local community supported them in the ways they most needed.

Another resource limitation for farmers was a lack of knowledge of farming techniques and processes. When speaking about past training experiences and perceived training needs, farmers mentioned their lack of knowledge as a barrier. One farmer said, "Without information you don't live. The state of our country is because of a lack of training. Any time they say training I will make myself available" (LB7). Another farmer said, "I just need someone to help me with this information" (M5). Farmers also showed their lack of knowledge throughout their interviews with comments such as, "Excuse me, I am not an agronomist so I don't know seasons or how to plant" (LB7). M3 also showed the lack of knowledge when he said, "Yes, show me how to plant, in which season and in what month I will find most profit in the farm."

When asked about ways to diminish barriers one farmer stated he needs "water and seeds" (M6). Another farmer said, "I am living in a country where seeds are expensive to buy. I don't have revenue to purchase what I need" (M2). When asked further about barriers one farmer stated, "It's so hard to buy in the market because farmers

have a hard time. Also, farmers are leaving the farmland and moving to the cities" (G4).

Summary. Of the 11 barriers water management, heat exposure, and crop pests were the only three faced by every farmer. Every farmer, however, stressed water management (including irrigation), considerably more than heat exposure and crop pests. Many farmers stated it was the most pertinent issue faced by them on their farm. One farmer stated, "the biggest need that I have is water" (M2) and another stated, "the biggest issue is water. Everything else is just small stuff, like insects" (L3). Some farmers went as far as stating the lack of water was the cause of some or all their barriers, "we have no water so we have insects come eat our crops" (M7). When asked about solutions to diminish barriers one farmer stated, "If God gave me water, I would be good" (M4).

Only one participant (L3) mentioned flooding being a barrier. Another barrier identified was a lack of animal control. One farmer noted, "My goats and cows eat my crop" (LB3). Another participant noted, "Sometimes people bring cows to my land and they eat my crops." (LB4). Finally, farmers frequently mentioned weather being a barrier for them. One participant stated, "Rain used to fall but not anymore" (G4), and another stated, "The problems that I have is that I plant bananas when the rain comes but then the sun comes out and it burns" (G6).

Receptivity Towards Training

Overall, farmers showed great enthusiasm towards receiving training. Most farmers were eager to begin training sooner rather than later. One farmer stated, "It's no problem. Any time or date and I will be there because I need it" (LB5). Another farmer said, "You mentioned this training, and I want to make sure I know exactly when it will be" (LB6). None of the farmers

had received any form of agricultural training, yet all the 28 interviewed farmers had been farming since childhood. In their responses, farmers suggested five general topics as their training needs. These topics included: (a) irrigation, (b) efficiency in farming, (c) cultivation best practices, (d) planting seasons, and (e) access to capital. Of these five topics *irrigation* and *planting seasons* were mentioned much more than other topics, with 25 farmers mentioning irrigation and 18 farmers mentioning planting seasons.

External Locus of Control

Our data led to one emergent theme relevant to the purpose of this study. This theme gave light to understanding the historical and cultural background of Haitian farmers. Participants had a strong *external locus of control*, largely centered around religion. Almost every farmer made mention to religion during their interview. When asked if he wanted to send an additional message to the researchers, one farmer said, “I want them to know I am perishing in this land. I hope God would knock on their hearts because we need this” (M2). When asked about his barriers as a farmer, a participant noted, “so we believe that when God wants that’s when we will have rain” (M1). Religion was a clear aspect of being a farmer. This directly connected to a second theme found, which was external locus of control as the cause of barriers. One farmer noted, “I think it’s our sin. God decided not to give us water. We have sinned” (M5). Another stated, “Well, we have a curse on our land. We used to have rain but not anymore. Not only those but prices have risen” (LB1). Whether it be God or nature, it was a common theme that barriers were caused by a force outside of their control.

Conclusions, Implications, & Recommendations

The small scale farmers in the North Department of Haiti who participated in this study faced many barriers. The interviewed farmers had a long list of barriers that included: (a) water management, (b) crop pests, (c) heat exposure (d) economic needs, (e) lack of support, (f) lack of knowledge, (g) lack of seeds, (h) poor market conditions, (i) floods, (j) lack of animal control, and (k) weather. Several of these barriers could be addressed through farmer support by the MARNDR extension division. However, it does not appear farmers in the North Department have access to these services (Zeleya et al., 2016). There also appears to be some similarities to what Maiga et al. (2016) found in West Africa. Solutions to overcoming these barriers should become a priority for extensionists and agricultural development practitioners in Haiti. It is recommended that researchers examine the efficacy of inexpensive innovations that would be able to mitigate some of these barriers.

Results of this study also show small scale farmers in the North Department of Haiti are receptive to receiving training, even though none of the farmers had ever received any previous agricultural training. This information implies there is opportunity for capacity building programs for farmers in the North Department. It is recommended that extensionists and agricultural development practitioners in Haiti develop a plan for capacity development in the North Department. Because agricultural development is a prerequisite to economic and social development, it is imperative that training opportunities are given to all Haitian farmers (Arias et al., 2013). It will, however, be important to remember a one-size-fits-all approach to farmer training may not be appropriate (Roberts et al., 2015).

The data showed that farmers identified five general topics as their training

needs. These topics included: (a) irrigation, (b) efficiency in farming, (c) cultivation best practices, (d) planting seasons, and (e) access to capital. Within these broad topics, our results did not reveal specific topics for individual workshops. We, therefore, recommend a more thorough needs assessment be conducted with small scale farmers in the North Department, especially on irrigation and water management. This will then allow extensionists and agricultural development practitioners to develop, deliver, and evaluate training programs for these farmers. The work of Zeleya et al. (2016) can provide some guidance for developing trainings in this region. It is plausible farmers may prefer informal information sources, similar to what Sandlin (2015) found in Trinidad.

Finally, the prevalence of an external locus of control will be an important factor to consider when attempting to address barriers faced by these farmers. The external locus of control was also observed by Zelaya et al. (2016) who used the term *powerlessness* to describe farmer perceptions towards some of their barriers. This phenomenon provides interesting insight about Haitian farmers and their perceptions of farming in Haiti and additional research is needed on this phenomenon and about implementing change in such an environment.

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