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UNDERSTANDING JAMAICAN SMALLHOLDER FARMERS' MOTIVES TO FARM AS EVIDENCE FOR BOTTOM-UP FOOD SECURITY POLICYMAKING

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ABSTRACT

Food security and agriculture have been inextricably linked in the efforts to achieve the United Nations' Sustainable Development Goals (SDG) of ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture over a 15-year effort (2015-2030). Food insecure countries, such as Jamaica, need to identify a corps of traditional crop farmers, sufficiently driven to consistently achieve high productivity, and invest in these farmers to help them expand and modernize their activities. Drawing from the Theory of Planned Behavior for theoretical grounding, this study used qualitative methods to examine the motives and reasons smallholder farmers became farmers. The study illuminates the experiences of selected smallholder farmers in western Jamaica (N=42) to reveal their motives to farm, successes and constraints in terms of production practices and farm business development. The data, which can be used to inform bottom-up policy formulation, indicated that small farmers in Jamaica experience similar agricultural challenges, but that their motivations to farm are heterogeneous. A typology of smallholder farmers produced four discernible farmer sub-populations. This study provides context-specific profiles and information about the complex social, economic and cultural interactions that result in choosing farming as a career. This typology generates evidence that can help guide the refinement of food security programs, extension services and policy interventions to better target a heterogeneous clientele. This characterization of farmers can also add depth and background to discussions about the efficient allocation of scarce resources within the traditional food crop sector.

Keywords: Food security, bottom-up approach, smallholder farmers, motives to farm.

INTRODUCTION

In the aftermath of the world food crisis of 2008, many countries have struggled to develop innovative policy responses to address the issue of food insecurity. Food security and agriculture have been inextricably linked in the efforts to achieve the United Nations' Sustainable Development Goals (SDG) of ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture over a 15-year effort (2015-2030) (United Nations, 2016). In Jamaica and the Caribbean, the high debt to GDP ratio, increasing urbanization, the loss of traditional export markets and a burgeoning food import bill are just some of the problems policymakers have to consider in their attempts to find solutions to the complex issues

contributing to the national and regional food security problem. Smallholder farmers are major stakeholders in the milieu because they represent the backbone of the domestic agriculture sector. In developing countries, a bottom-up orientation is particularly relevant for food security policy interventions. Agricultural systems in such countries are finely tuned to local conditions; therefore, there are unique conditions to be considered at each farm's locale (Horton, 1998). The perspectives of farmers and the dynamics of their situations are relevant to the planning and execution of policies in the sector. The main thrusts of a bottom-up approach to decision making stem from utilizing the knowledge of actors, valuing their interactions and having an understanding of the complex interplay of various local-level situations in specific sectors (Sabatier, 1986). To ignore or devalue this information that can be generated from

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the “bottom” can be perilous because this information has the potential to lead to policy objectives that are poorly designed or contradictory, as Grant (2006) pointed out. The need to introduce new context-specific evidence using a bottom-up orientation to the policymaking process leads to the purpose of this article. It examines the motives and experiences of smallholder farmers for evidence that will serve to inform policies, strengthen extension services, and improve domestic production and food security outcomes.

Agriculture continues to play a major role in rural development in Jamaica, and smallholder farmers have a stake in maintaining traditional crop diversity and increasing access and availability to traditional foods. In 2011, the sector was the second largest employer of citizens with 17.6% of the labor force. Nationally, it contributed 6.6% to GDP (Planning Institute of Jamaica [PIOJ], 2012, p.10.1). But food crop agriculture in Jamaica, as in many other places around the world, faces many uncertainties. Jamaican smallholder farmers face competition from non-farm activities for land and labor, cheaper food imports, and increasingly, the vagaries of the weather due to climate change (Beckford et al., 2007; World Bank, 2007).

The reasons farmers engage in farming must be considered in the generation of accurate context-specific evidence for bottom-up decision making. Because smallholder farmers are not a homogeneous group (High Level Panel of Experts on Food and Nutrition [HLPE], 2013; International Fund for Food and Development, 2013; Murphy 2010), their motives, as well as the barriers that prevent farmers from achieving sustainable success, require careful attention from policymakers. This article suggests that an acknowledgement of the heterogeneity among smallholder farmers and their current challenges and successes can result in more effective and efficient allocation of resources through targeted programs and policies.

The diversity of the Jamaican agro-ecosystems sets the stage for wide-ranging choices of crops, production and marketing systems. Smallholder farmers produce varying amounts of such staples, including breadfruit, banana and plantain; root crops such as yams, sweet potato, dasheen and cassava; fruits, such as ackee, coconut, sorrel, mangoes and avocados; vegetables, including callaloo and pumpkin; and condiments, such as hot pepper, thyme and scallions for sale or household

consumption (Beckford *et al.*, 2007; Houston, 2005; Spence, 1999; Innerarity, 1996). These crops, which have adapted to the local and unique ecosystems, are deeply entrenched in local food traditions and contribute to Jamaicans’ daily caloric intake (Bondoo, 2012; Hills, 1988; Ramakrishnan, 2001; Sefa-Dedah, 2003).

Study Purpose: The purpose of this article to describe the characteristics of Jamaican smallholder farmers in a way that might help policymakers have a clearer picture of the various types of people who may be affected by national farm policy and who may benefit from national agricultural extension education efforts. This article delves specifically into the experiences and motivational orientations of Jamaican smallholder farmers. Drawing from Jamaican farmers’ perceptions and stories, this research aimed to develop a typology generally characterizing the diversity of smallholder farmers in western Jamaica. A typological approach supports diversified intervention strategies that would enable policymakers to engage in more cost-effective targeting of smallholder farmers and provide a clear understanding of the target group. This kind of bottom-up information may add greater precision and efficiency to food security policy interventions and policy initiatives. It should also serve to inform international extension professionals and administrators on educational programming initiatives targeting smallholder farmers.

Two research objectives guided this study: (1) to characterize the motives and characteristics of Jamaican smallholder farmers, culminating in a typology describing the general categories of farmers that emerge; and (2) to characterize important challenges to farming identified by the various types of farmers in the study.

Conceptual Framework-Considering Diversity: Increasingly, the literature on agriculture is embracing heterogeneity among farmers as an important construct that can inform policy. This acceptance among policy experts comes with the understanding that the diversity reflects norms within a community that have critical impacts on agricultural planning (Alsos, Ljunggren & Pettersen, 2003; Barnes & Toma, 2012). Spence (1999) noted that a prerequisite for the formulation of successful initiatives geared toward agricultural development in Jamaica must be the recognition of the dynamics that underscore small-scale farming. One

particularly important dynamic is the reasons farmers in Jamaica choose to farm. Understanding farmers' various underlying motivations to begin farming and to continue to farm is crucial to the formulation of programs, projects and policies, which should be designed with the differences of target sub-groups in mind. Though some scholars caution that policies cannot be too specific for practical reasons, the same scholars recognize that homogeneous policy initiatives would affect individuals in different ways is important (Pike, 2008; Pinstrup-Andersen & Watson, 2011; Ravallion, 2003).

Empirical evidence and conventional wisdom suggest that the more homogeneous the characteristics of agricultural producers are, the more effective interventions are likely to be (López, 2007). In Jamaica, although smallholder farmers face similar challenges, they are not a homogeneous group. Smallholder farmers harbor different reasons for becoming farmers and have varying priorities. Their multiple identities are shaped by social, economic and cultural factors, occupational motives, challenges, and opportunities (Aitchison & Aubrey, 1982; Fan *et al.*, 2013; Pinstrup-Andersen & Watson, 2011; Vik & McElwee, 2011). The World Bank (2007) identified the pervasive heterogeneity among smallholder farmers as one of the single most important factors that can have serious implications for national policies seeking to leverage agriculture for economic development and improved food security (HLPE, 2013). During the past decade, researchers have used a typological approach in agricultural research to make a variety of distinctions among farmers. Barnes and Toma (2012) used a typology to categorize Scottish dairy farmers' attitudes toward climate change, and Hayati & Karami (2005) created a typology to categorize Iranian farmers' perceptions of the causes of poverty, making recommendations for poverty alleviation strategies. Small-scale farming in Jamaica has been classified by farm sizes and types of production and market orientations (Beckford *et al.*, 2007; Weis, 2001); by soil type and associated mixed or specialized production; by owner or tenant tenure (Beckford & Barker, 2007; Spence, 1999); and by farmers' attitudes and resource bases (Meikle-Yaw, 2005). Burton (2004) proposed the formation of typologies of similar-thinking farmers. Burton's approach was used in this study to identify smallholder farmers with comparable motives for their occupational choices.

The reasons farmers participate in farming are seldom given much attention; therefore, an understanding of the root causes underlying the diversity among smallholder farmers has never been fully examined or viewed as a potential tool for improving food security policymaking.

Theoretical Framework-Theory of Planned Behavior:

The Theory of Planned Behavior (TPB) (Ajzen, 1991) is a prevalent behavioral choice model in agricultural social science research literature. The theory is accompanied by a model that, because of its simplicity, is useful in helping policymakers understand some of the non-economic issues influencing farmers' behaviors, intentions, and decision making (Edward-Jones, 2006; Pennings & Leuthold, 2000). The TPB model, based fundamentally on Ajzen & Fishbein's (1980) Theory of Reasoned Action, explains how an individual behavior is tied to the intention to engage in that behavior (Ajzen & Madden, 1986; Fielding, Terry, Masser & Hogg, 2008; Mathieson, 1991; Hansson, Ferguson & Olofsson, 2012; Kauppinen, 2010). According to the Theory of Reasoned Action, behaviors are immediately preceded by intention to perform the behavior, and the stronger the intention, the more likely the person is to try and, therefore, to perform the action. Two mitigating factors apply in this model: (1) the person's attitude toward the behavior, or the degree to which the person views the behavior as favorable or unfavorable, and (2) the subjective norm—perceived social pressure to perform or not perform the behavior. Therefore, important influencers include the person's strength of beliefs and attitudes related to the behavior as well as the beliefs of that person's important referents and whether or not the referent would approve of the action. The TPB model extends the Theory of Reasoned Action to include a third pillar-influences outside the person's control. Especially important is the presence or absence of perceived behavioral control. This is the person's perception of how easy or difficult the action may be (Ajzen, 1991; Ajzen & Madden, 1986). Influencing factors may include the perceived presence or absence of resources and opportunities and the perceived presence or absence of anticipated obstacles. In the TPB model, people who perceive a lack of resources and opportunity are not likely have a strong preference for engaging in the action, and vice-versa. The TPB model (Figure 1) depicts the decision-making process, demonstrating how attitude, subjective norms

and perceived control contribute to intention and, therefore, to behaviour.

METHODOLOGY

This descriptive study followed the descriptive qualitative research paradigm (Creswell, 2007; Glaser & Strauss, 1967; Strauss & Corbin, 1998), seeking a well-supported characterization of the culture of smallholder farmers in western Jamaica. In-depth interviews, as described by Edwards and Holland (2013) and participant observation, as described by Kemmis & McTaggart (2005), were methods used for this study. Forty-two participants from farming communities in the interior of five parishes in western Jamaica were interviewed during a six-week

period from December 2012 to January 2013.

Figure 2 shows the study area in western Jamaica where interviewees were recruited using a snowball sampling procedure (Edwards & Holland, 2013; Morgan, 2008). The participants were further screened to generate both a theoretical and a purposive sample by selecting cases that fit the parameters of the research (Edwards & Holland, 2013; Tracy, 2013). The criteria for selection were the cultivation of a two to five-acre farm and production of traditional food crops with a marketable surplus for domestic sale. These farmers represent a key source of country-specific data that are necessary for bottom-up food security policymaking.

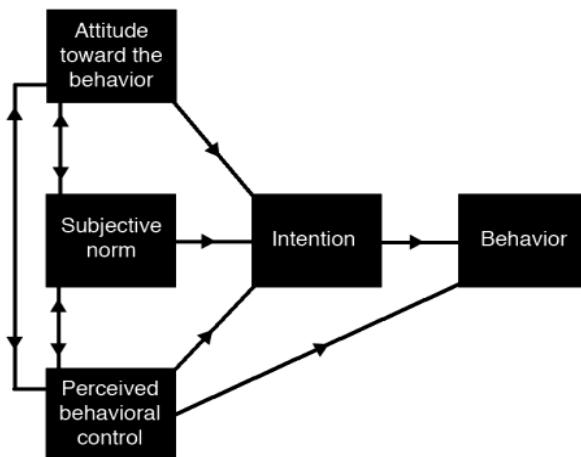


Figure 1. Theory of planned behavior conceptual model (adapted from Ajzen & Madden, 1986).

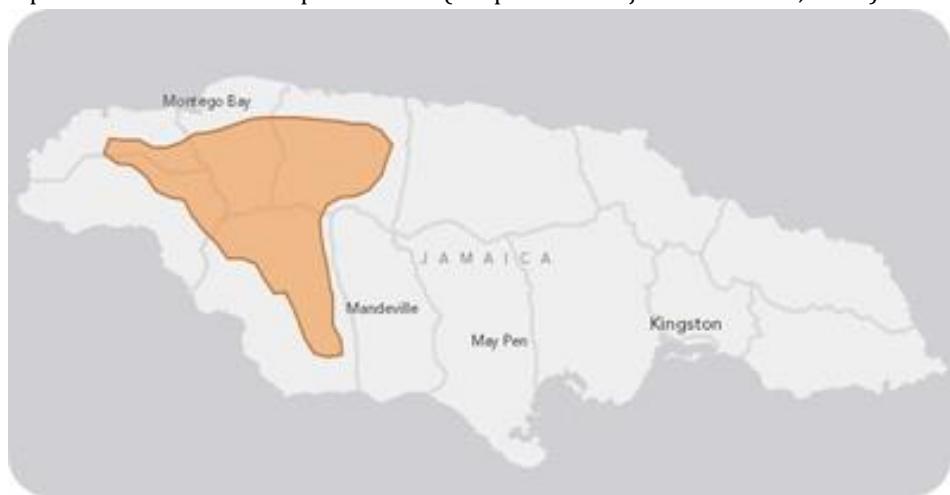


Figure 2. Map of Jamaica showing study area (generated using ArcGIS®).

The in-depth interviews were conducted individually, tape recorded and later transcribed verbatim. The transcripts and field notes were coded using NVivo 10, a software product line of Qualitative Research International (QSR International Limited, 2012). The

NVivo software facilitated the constant comparative method of analysis (Strauss & Corbin, 1998). Open coding and axial coding allowed for the exploration of relationships at the individual and group levels (Robson, 2011; Strauss & Corbin, 1998). Emergent themes

resulting from the axial coding generated a typology of Jamaican smallholder farmers based on their motivational orientation for engaging in farming. Methods to ensure the quality and credibility of the data analysis included peer examination, member checks, and clarification of researcher biases via a reflexivity statement (Merriam, 1998), as well as a detailed audit trail (Merriam, 1998). Peer evaluation was conducted by fellow researchers, who reviewed the findings and examined the audit trail to determine the quality of the logic and the accuracy of the findings according to the data. While the study was conducted as objectively as possible, the authors acknowledge the inherent bias in participant -observation research, so a reflexivity statement (below), which helps clarify the "filter" through which the data were analyzed.

Reflexivity Statement: In order to understand the context of the results described below, readers must understand the context from which the researchers viewed this study. The principal investigator is a Jamaican native, with graduate degrees in agricultural economics from U.S. institutions. Her background and professional interests include agricultural extension work to help improve farming productivity in Jamaica and similar developing areas. Raised in Jamaica and knowledgeable of agricultural practices in the country, she brought to the project a pre-formed, intimate, yet general understanding of the culture of small famers in rural Jamaica. The secondary authors, American professors, in their respective disciplines of agricultural communications and agricultural economics, helped guide the PI through the data collection and analysis process. Both secondary authors also have research interests in improving small-holder farmers' productivity in developing countries, though their experiences with the culture of Jamaican agriculture were limited and their understanding of the culture has been reliant upon descriptions provided by the lead author.

RESULTS AND DISCUSSION

All participants (N=42; 26 women and 16 men) gave responses to the question "why did you decide to become a farmer?" The responses to this question weighed heavily in the formulation of the smallholder farmers' typology. However, other attitudinal constructs were also identified in the farmers' comments and responses to other questions. The responses revealed that the farmers' accounts of their motivational orientations were varied and tied to a host of behaviors.

The research yielded detailed self-reported reasons for work choice, success stories and challenges experienced by smallholder farmers. These inter-related characteristics formed a tapestry of motives showcasing the diversity that exists among the farmers in the western Jamaica. Ultimately, four types of farmers emerged. These categories were labeled with terms that best captured the dominant attributes expressed by those participants: *sustainers, go-getters, stalwarts, and entrepreneurs*. These categories were not exhaustive, nor were the divisions between the categories discreet; some amount of overlapping existed. However, discernable differences within the self-reported explanations could be distinguished. Pike (2008) likened categories in a typology such as this to the color bands in a rainbow, where the transition between colors is blended, but it is still possible to distinguish the exact color.

Note on orthography: This manuscript retains the vernacular of the participants in the form in which it was spoken. This form reflects extensive use of the Jamaican dialect, termed locally as "patois." Although the participants were interviewed using Standard American English, their responses may appear to contain slight distortions in pronunciation and inaccurate grammatical structures to readers.

Motives and Characteristics: Table 1 summarizes the heterogeneous motives and characteristics of smallholder farmers who engage in traditional food crop agriculture in western Jamaica. The sustainers (N=13) group included the largest number of smallholder farmers. The go-getters and stalwarts (N=11) had equal numbers of participants, and the entrepreneurs (N=7) completed the typology.

Sustainers were participants who declared that they grew traditional food crops because they considered farming to be their sole means of survival. To them, farming was something that kept them from being idle; they pursued farming as a last resort. An example of a sustainer in this study was a male respondent who explained that after suffering repeated injuries to his eyes, as a welder, he was no longer able to perform in that job. Instead of sitting idly at home, he decided to plant some crops to earn an income and provide food for his family. He explained that while farming was not his first choice, he ended up doing it because he needed to "do something" to occupy his time. Other sustainers echoed similar motivation for farming and elaborated about their lack of marketable skills.

Table 1. Typology of smallholder farmers in western Jamaica.

	Sustainers	Go-getters	Stalwarts	Entrepreneurs
Number of cases	13	11	11	7
Basis of motivation	Survival	Household security; autonomy	Tradition; culture; rural lifestyle	Profit
Characteristics	<ul style="list-style-type: none"> • Possess limited education and other marketable skills • Perceive of farming as a last resort; they have no options or alternate job choice • Earn low income from other jobs • Desire to be productive and to avoid being idle 	<ul style="list-style-type: none"> • Embrace the role of being one's own boss • Manage all aspects of their activities—self-reliant • Independence; (women seek to be independent of men) • Self-employed (earn own income) 	<ul style="list-style-type: none"> • Carry on a family tradition • Feel a sense of pride from farming • Value community • Love to grow plants and enjoy nature • Well-known in the community for providing food 	<ul style="list-style-type: none"> • Possess formal agriculture education and training • Chose farming as a career • Take a business-like approach to farming (assess risk, profit and loss in decision making)

When you don't have no education, you affi [have to] try and do something feyuself [for yourself]. You cyah [cannot] just get up every-day and fold yuh [your] hands so ... Mi do farming so dat mi [so that I] can eat and survive. (Sustainer, female, age 60 to 69)

Food crop agriculture for these participants represented "something to fall back on" or something they did instinctively for subsistence. Sustainers tended to grow the food crops they like to eat and those that grow easily in the area. They ate more of their produce than they sold but earned an income hustling and selling their surpluses to local buyers, albeit inconsistently. They were the primary source of labor on their farms and rarely employed paid laborers. Women in this group typically supplemented their income by doing off-farm part-time work as care-givers or household helpers. Both men and women reared a few animals such as pigs, goats, and/or chickens, which were generally sold to supplement living expenses. Go-getters expressed a desire to be self-reliant and to be their own bosses. The female go-getters repeatedly declared the need to have their own money as their impelling motives for pursuing crop agriculture. One participant from this category stated her feeling especially succinctly:

It [farming] makes me not dependent and no one can push mi 'round [me around] and tell me when to work. (Go-getter male, age 60 to 69).

One woman pointed out that she started in farming to assist her husband but that she later decided to cultivate her own farm because it afforded her more independence and household security. Go-getters were predominantly vegetable farmers but they also produced small quantities of some traditional staple crops. They were intimately involved in the marketing and distribution of their products and preferred to engage in the direct sale of their produce to the consumer. They reported being unwilling to sell to middle-men because they were motivated by the prospect of financial independence and controlling the terms of their employment. The work on the farms of these smallholder farmers was done by the farmer with assistance of family members and paid day-laborers as the various activities dictated. Similar to the sustainers, go-getters raised animals to supplement their income. Chickens and pigs are the most popular animals reared. The go-getter smallholder farmers also had other sources of off-farm income such as remittances, profits from a small shop, a street-side stall, or proceeds from a personal automobile that doubled as an unofficial taxi at night.

One third of the farmers were stalwarts, found to be driven by their love of nature, an affinity for a rural lifestyle, and an innate commitment to their local community. Many stalwarts cited pleasant childhood

memories about farming as their motivation for becoming farmers.

They carried with them a strong sense of responsibility, which they credited to the influence of their parents and an early induction into farming activities. For stalwarts, growing up in a farm family and witnessing first-hand the commitment and contributions farmers made to life in the local area influenced their decision to be farmers. Stalwarts chose freely to become farmers and prided themselves on being providers of food. One participant with 38 years of farming experience fondly recalled that during his childhood almost all the food for his family came from his father's farm. Because the farm was able to provide food and money for the entire family, he decided to pursue the same career as his father. Another participant elaborated in a typical Jamaican lilt:

Yuh whey [did you] know dat di [that the] farmer is the backbone of di [the] district? Well, growing up, farmers are important people, is only now dat [that] we can get food what no come from here (imported) that farming is not so important ... My father farm and so mi follow in 'im [his] footstep (Stalwart male, age 70 or more years old).

The stalwarts had a vast amount of practical knowledge and were well-known in their communities. They received referrals for the sale of their crops from community members. These farmers planted a wide variety of the staple crops, were altruistic, and were comfortable receiving the price at their farm-gates. They also expressed a willingness to share copious portions of their products with neighbors. Most of the labor on the farms of stalwarts was provided by the farmer, family members, and paid laborers. This group of smallholder farmers frequently reminisced about a form of labor exchange called "day-for-day," which used to take place as part of a mutually beneficial group effort. According to the participants, however, this tradition deteriorated over the years, so farmers were forced to use paid laborers for efficient land preparation and re-planting activities. Stalwarts in this study indicated that financial support from adult children and from the sale of cows and pigs were some of their sources of additional income.

The final group of farmers in this typology, with the fewest identified members, was the entrepreneurs. The entrepreneurs conveyed that profit making was the reason for their entry into food crop agriculture. Some of these farmers had formal training in agriculture and

deliberately chose farming as their career. A young man testified to this:

Well, basically since I left tertiary institution I have been farming. I did general agricultural studies and have a level-two in poultry farming and crop science. [Choosing his words carefully, he continued] ...I see it as a profitable business that ummmm ... can take you to a higher place with persistence and good management (Entrepreneur male, age 30 to 39).

A female farmer who was using her agricultural activities to fund her retirement explained that her reason for cultivating traditional food crops was to become an established farmer and business woman. She used her farm products to make value-added products, such as jams and jellies, to sell locally through linkages she had created with the tourism industry.

Those in the entrepreneurs group were investors who responded to market forces and policy initiatives, especially within the agro-processing industry. They valued mass production, and their farms were the least diversified. Entrepreneurs generally supplied agro-processors and exporters with the bulk of their crops. They wholesaled smaller amounts of their crops to vendors who operated at the local markets. Condiments such as hot peppers and scallion, as well as specific varieties of yams, were popular crops grown by these farmers. The entrepreneurs did not have the protection from risks that other farmers who plant multiple crops experience. One male entrepreneur underscored his awareness of this risk associated with his business. He explained that when the market fails, large quantities of hot peppers can neither be eaten nor used as a substitute feed for livestock, so he experiences a total loss financially. These entrepreneurs noted that they were also more susceptible to loss by diseases that can destroy their entire crop if they do not practice good farm management practices. They worked to minimize the risks in order to reap the rewards. Notably, entrepreneurs provided the most consistent employment, having both full-time and part-time workers. Most workers were employed during periods of planting and harvesting. The findings showed that entrepreneurs supplemented their incomes with a variety of non-traditional agricultural ventures. Bee-keeping is one activity that two of these farmers deemed worthy of their investment.

Generally, across the typologies, the wide ranging motivational orientations included pride in self-

employment, potential for improving household food consumption, the need for independence, and a strong commitment to a lifestyle close to nature. For some smallholder farmers, traditional food crop production was undertaken because they perceived they had few other opportunities and therefore had no other choice. Still for others, farming was a birthright and was done out of a sense of duty.

Challenges Faced by Smallholder Farmers: According to the World Bank (2012a), the perspectives of

Table 2. Challenges facing smallholder farmers.

Major Challenges	Minor Challenges	No Challenge
Cost of inputs (Pesticides and fertilizers)	Labor	Availability of inputs including pesticides and fertilizers, seeds, suckers and machinery
Weather	Technical advice	
Irrigation	Spoilage	
	Roads to market	
	Praedial larceny	

Cost of Fertilizers: Chief among the constraints the participants reported was the high cost of inputs, in particular fertilizers. One participant lamented ...

... farmers sometimes no have di money fe buy di [to buy the] fertilizer ... when you plant one acre a corn ... and fertilize it, you cyahmek it back [you cannot recover the cost of it].

The majority of the informants ranked their inability to afford fertilizer as a major challenge to their level of productivity. Farmers believed they needed to use fertilizers to boost their yield but found the cost of doing so prohibitive.

Lack of Irrigation: The lack of irrigation was also regarded as a major constraint. The entrepreneurs in this study were the farmers with the most irrigated farmland, so irrigation was less of a problem for them. However, the go-getters expressed frustration over the limitations of geographical location and the absence of irrigation infrastructure. Some sustainers and stalwarts tended to speak about irrigation in terms of rainfall patterns and changing weather conditions, likely because their production is mainly rain-fed and they do not consider mechanical irrigation a possibility.

Availability of Labor: Labor featured prominently as a constraint in the agricultural activities of the farmers in all four categories. The problems associated with labor ranged from its unavailability in some areas and its high cost, to the poor quality work done by laborers. Good workers were in short supply according to the

individuals experiencing a job generally reflect the dominant social perspective and constitute a useful starting point for inquiry. Hence, respondents were asked to discuss and rank the most important challenges they faced in their agricultural activities. The participants were very forthcoming about the following limitations to traditional food crop farming in Jamaica. Table 2 shows the farmers' perceived challenges the smallholder farmers identified as constraints to their work and the relative importance of those challenges.

participants in this study. These smallholder farmers elaborated:

Listen, the job is here, but it's the worker that is the problem. The job is here because right now I can employ all four more man yuhnuh [up to four more men, you know] ... but dem [their] attitude poor. If mi did have [if I had] some people who woulda work, mi could do more [I could produce more (crops)] (Entrepreneur, male, age 50 to 59).

A female participant stated, "As a ooman [woman] farmer you cyah get no [cannot get any] help wid it [with (farming)] so yuaffibattabatta [you have to struggle] and tek time dweetyu self [do it by yourself little by little]" (Sustainer, female, age 60 to 69).

Some stalwarts contended that the labor shortage experienced by farmers was a reflection of the attitudes in the wider society because people are not interested in agriculture. The stalwarts recounted experiences from the past and complained about the loss of a traditional labor practice involving labor exchanges. These farmers, more than others in this typology, thought that their labor problems stemmed from the erosion of "day-for-day." This was a practice by which a group of farmers would spend a day working on the farm of each group member until everyone in the group had their labor needs addressed. An older stalwart's response reflected the local changes in agricultural labor practices:

It's not like first time [in the past] ... everybody provide their own labor. It's not like when I was growing up and they had what we call "working"

dat system break down ... [pausing reflectively before continuing slowly] ... it break down a lot (Stalwart male, age 70 or more years old).

The issue of labor on the smallholder farm is further complicated by the suspicions and lack of trust farmers have of potential workers. One participant matching the profile of an entrepreneur explained:

In this area, labor can be had fairly easily, but you have to be careful who you choose because of praedial larceny. Some of them will work with you and after you pay them and they know you are gone home for the day they come back to reap for themselves and enjoy themselves (Entrepreneur female, age 60 to 69).

Praedial Larceny: Praedial larceny, or petty thievery of agricultural products, was another challenge the faced by the smallholder farmers in western Jamaica. The participants in this study had a range of perceptions about this criminal activity. For instance, one sustainer mentioned sympathetically that the petty thieves would "... only take one or two things, but not too much." But go-getters and female farmers were more incensed by the actions of larcenists. The losses farmers experienced were not only restricted to crops, but also included expensive farm equipment:

Misuffa bad, demteef everything! [I suffer greatly, they steal everything!] Mi [my] equipment and pipe fixtures on di farm. Di other day demteef mi [they stole my] mist blower wha [which] cost mi J\$ 70,000 (USD \$700), so now mi affi go [I have to] buy another one and demteef [they have stolen] one pump from mi down here too. We need some stiffer laws (Go-getter female, age 40 to 49).

The farmers expressed frustration with the inability of the authorities to curb this illicit behavior. However, one stalwart summarily stated the resolve of many when she commented that "You can't make thief stop you. If you make them deter you there will be no food in this country" (Stalwart female, age 50-59).

Weather Changes: Weather-related problems were cited as another major challenge for the informants in this study. The data for this research was collected within two to three months after Hurricane Sandy hit Jamaica in October 2012. The participants communicated the difficulties they were experiencing with droughts, bouts of heavy rainfall, and frequent hurricanes. They felt ill-equipped and ill-prepared to cope with the effects of these extreme weather conditions. An entrepreneur explained the impact of

inclement weather on agriculture production in the study area:

Yeah, the weather is a major challenge. Weather cause us to lose a lot of crop. Too much rain—right now rain is a major challenge, because whenever we getting the rain we getting it too much ... The drought a one [is another] major challenge again [as well]. You know, we used to get the rain on a moderate rate but now mi no know [I don't know] anytime a [it's] dry time a [it's] just dry ... and when time [whenever] you see the rain, you just get too much rain. Because di [the] crop cyahtek [cannot take] too much rain it cyahtek [cannot take] too much drought. You know, it need a balance ... It cause di [the] farmer fe [to] lose a lot of crop. Mi no know wha' fe do [I don't know what to do] (Entrepreneur male, age 60 to 69).

Other Obstacles: Other notable challenges included the absence of an affordable credit or insurance scheme for smallholder farmers who often need support following the loss of their crops to natural disasters, pests, and/or diseases. The participants complained that they did not have the collateral required to qualify for existing programs. Another problem, which has direct implication for food security, related to complaints about the lack of adequate infrastructure and proper sanitary conditions at the local marketplaces. Farmers who sold their produce at local markets indicated that consumers were reluctant to visit the markets because of the general lack of order and poor facilities. These conditions had negative implications on the public's physical access to food, impacting food security in the area.

Smallholder Farmers' Successes: In spite of the constraints, previous research has described how Jamaican smallholder farmers took pride in the contributions they made to their household and the local community.

Figure 3, based on data gathered from the western Jamaican farmers interviewed shows how the four types of smallholder farmers contribute to food security by making food accessible to their own families as well as to the public by selling via wholesale and direct sales at local markets.

The darker colors in Figure 3 indicate a larger market orientation in the motivation of smallholders. The entrepreneurs and go-getters were the main sellers of significant amounts of traditional staple crops and were fully integrated into the market. Stalwarts and sustainers

mostly used their produce to satisfy household consumption, as depicted in the lighter shaded areas in Figure 4. An element of pride was associated with the success that the smallholder farmers felt about their contribution to food availability and by extension food

security. Smallholder farmers' ability to stave off hunger and to share food with family and friends was noted by stalwarts and sustainer, and entrepreneurs held the additional perception of food and employment opportunities to their communities.



Figure 3. Visual representation of smallholder farmers' contribution to food security, by typology (Adapted from Carr (2005).

CONCLUSIONS AND RECOMMENDATIONS

Smallholder Typologies and Characteristics and their Connections with TPB: The evidence derived from this study suggests that the motives and attitudes of the traditional food crop farmers are reflected in the three pillars of the TPB behavioral choice model (Ajzen, 1991)—(1) attitude toward the behavior, (2) perceived behavioral control, and (3) subjective norms. These pillars, along with the four-way typology including the categories of sustainer, go-getters, stalwarts, and entrepreneurs, provide a simple lens through which to view the conclusions of this study.

reflected very limited behavioral control. In contrast to the sustainer, the entrepreneurs', go-getters' and stalwarts' motives indicated deliberate occupational choices and many value-based reasons for engaging in farming.

- The third pillar of the TPB model addresses subjective norms that is, the attitudes of significant others or the social pressure placed on the individual to perform a behavior (Ajzen, 1991). Stalwarts reported feeling an obligation to be farmers because expectations existed for them to maintain the farming tradition in the family or in the community. However, all categories of smallholder farmers reported a sense of satisfaction with their jobs. Across they typologies the farmers indicated they perceived being valued as providers of food for their families and/or communities.

TPB was instructive in helping to conceptualize the component parts of smallholder farmers' decision making and brought into sharp focus other considerations for policymakers seeking to target that population. Smallholder farmers' attitudes toward their jobs, perceived behavioral control, and subjective norms are discreet factors that contributed to their behavior. These factors clearly influenced the motivational orientations of smallholder farmers, an important observation that holds implications for food security policies. The World Bank (2012a) deems this kind of

- The first pillar of TPB identifies whether the individual's attitude toward a specific behavior is positive or negative (Ajzen, 1991). The field interview responses showed that the go-getters, stalwarts, and entrepreneurs had positive attitudes and perceptions related to the profitability of farming. Meanwhile, the sustainer mostly viewed farming as a necessity for survival.
- The second pillar of the framework addresses individuals' perceived behavioral control, which takes into account the extent to which the individuals perceive they have control over performing a behavior successfully (Ajzen, 1991). The attitudes of smallholder farmers classified as sustainer, who expressed that they did not choose to be farmers but rather had no choice but to farm,

local knowledge significant to policymaking, especially in the agricultural sector where the behavior of farmers affects not only the well-being of the farmers but also the well-being of others in their societies.

The results of this qualitative analysis also revealed that in western Jamaica, smallholder farmers' livelihood choices were also the results of complex interactions among various social, economic and cultural factors. The motivation for food crop farming was fueled by household consumption needs, income generation needs, and cultural preferences. Although the farmers faced numerous physical, technical, cultural, and environmental challenges in their efforts to produce, in general they reported individual successes in their farming enterprises. Though across all four typologies, they acknowledged many specific barriers to their work (including rising fertilizer costs, unavailability of labor, lack of irrigation, weather changes, and a culture accepting of larceny), their responses did not indicate that these barriers would cause them to consider quitting farming. Farmers across the four typologies seemed to view the barriers not as preventing success, but more as limiting the ceiling of success. The World Bank (2012a) concluded that although "... farming jobs involve difficult working conditions, substantial variability in earnings, and no formal social protection, [farming] can make a major contribution to development or as a ticket out of poverty for many" (p. 17).

Recommendations for Policy Development and Extension Education: Classifying the motivational orientations of smallholder farmers yields crucial knowledge policymakers can use to provide targeted interventions addressing food availability in western Jamaica. Although the results show that all types of smallholder farmers contribute to food availability and play vital supporting roles, such as providing employment and preserving local access to food, the need to identify and support smallholders who have the impelling drive to overcome adversities in the provisioning of food is paramount to achieving food security in Jamaica (Sabatier, 1986). *Therefore, an obvious recommendation resulting from this study is for policymakers and extension educators to incorporate into their efforts a reasonable understanding of smallholder farmers' motivational characteristics in order to more effectively target educational and economic resources.*

This context-specific knowledge is useful for bottom-up policy making regarding food production and

consumption, market linkages, and assessing vulnerability among the heterogeneous smallholder farmer population.

The results of this study also point toward a renewed policy-making focus on more innovative context-specific interventions, formulated from the bottom-up and focused on specific types of farmers (i.e., sustainers, go-getters, stalwarts, or entrepreneurs). Choosing whether or not to take a more targeted approach will be one of the more critical decisions policymakers and extension educators will have to make in determining how to address barriers to successful farming. Though such targeted efforts might reach fewer farmers and therefore seem less efficient on the surface (Grant, 2006), targeting more specifically defined audiences with audience-appropriate educational programming and economic resources could be a more efficient and effective approach over time (Alsos, Ljunggren & Pettersen, 2003; Barnes & Toma, 2012). Because policymakers in Jamaica can ill-afford to wait for another food crisis to have strategies in place to address food security, one useful approach may be to identify a core group of producers to target with resources to improve sustainable agricultural production. Targeting subsistence-oriented small farmers (such as the sustainers and go-getters) with an eye toward motivating them to adopt new behaviors that would place them in the next-order typologies, may prove to be more cost-effective than other income transfers or social safety nets that are less targeted. Though a good amount of literature exists on the topic of targeted programming (Hazell *et al.*, 2010; Van de Walle, 1998; Wiggins, Kirsten, & Llambí, 2010; World Bank 2012b), continued region-specific research describing farmer typologies is necessary for informing public policy development and educational efforts.

This classification of smallholder farmers is one more tool decision makers have in their arsenal to use for the efficient and targeted allocation of resources. Smallholders' motivational orientations define more precisely certain sub-groups that are farmers by default, farmers for profit, and those who are embedded by tradition to crop agriculture. However, more research is needed to strengthen this particular typology and explore other context-specific evidence that could refine food security policy interventions in Jamaica and elsewhere.

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