

After the Storm: Haiti's Coming Food Crisis



Athena Kolbe, Marie Puccio and Robert Muggah



PHOTOS: CHARITY HOFFMAN

Introduction

Far from global media headlines, tropical storms devastated Haiti during the recent hurricane season. In late August 2011, 19 people were killed when hurricane Isaac touched down.¹ More than 50 more people were killed when Hurricane Sandy ripped through Southern Haiti in October 2012.² Some 16 more people were killed in November 2012 during flooding in the northern city of Cap Haitien.³ And the impacts extended beyond death and injury: rain triggered mudslides throughout the country, washing out homes, roadways and bridges and bringing transportation to a near standstill. Compounding extensive protracted internal displacement generated by the 2010 earthquake, government officials estimate tens of thousands more were made homeless.

¹ See Blanco (2012).

² See Fox News (2012).

³ See "Floods claim as many as 16 lives in Haitian City" AFP (2012).

This *Strategic Note* examines the impacts of the storm on current and future food security in Haiti. In recent years, limited access to food coupled with rising food prices in Haiti's urban areas have been a trigger for demonstrations – some violent – and are believed to have contributed to a spike in property crimes during the six weeks following the 2010 earthquake.⁴ Haiti has long struggled to transport enough produce from the countryside to village markets and major urban centers, in part owing to dilapidated public infrastructure, a reliance on small rural farms, and few paved roads. This succession of natural disaster events has compounded existing challenges further still.

The 2012 hurricane season generated profound impacts on Haiti's population by reducing food security and limiting basic service provision. Garnering lessons from these events can potentially help mitigate a future food crisis. Drawing on extensive household surveys conducted in October and November 2012, key findings of this *Strategic Note* include:

- ***Rural households in the surveyed areas of Haiti's Ouest, Nord and Grand'Anse departments experienced severe food shortages after tropical storms hit Haiti during October and November 2012.*** Nearly 70 per cent of households experienced moderate or severe hunger as measured by the USDA Food Security Scale.
- ***Following the last round of tropical storms, more than two thirds (68.3 per cent) of surveyed households lost crops from their fields.*** Owing to differences in crop varieties and the physical geography of farming land, this was more common in the Grand'Anse and Ouest (72.5 per cent) than in the Nord (40.1 per cent).
- ***Education, employment (in addition to farming), and receiving financial remittances from family or friends abroad were all protective factors for post-storm hunger.*** Receiving any money at all from abroad in the last 12 months made a household 8.1 times less likely to experience hunger after the storm.
- ***Post-disaster water issues are pervasive.*** Less than ten percent of surveyed households were drinking treated water in the week after the storm. This is in addition to the fact that overflowing latrines (reported by 40 percent of households) may have contaminated the home's water supply.
- ***Barring significant intervention, over the next six to twelve months, Haiti's food security situation looks bleak.*** With roughly three quarters of households surveyed lacking the seeds, cuttings and tubers needed to grow food during the coming season, it is likely that the country will be forced to import more expensive food from abroad to meet the needs of the local population.

Methods

Household surveys are valuable for gathering critical information on at-risk population groups, including after natural disasters.⁵ The present assessment was rapidly administered by an experienced Igarapé Institute-led team of Haitian and international researchers including 37 national enumerators.⁶ To survey a large enough sample of the population

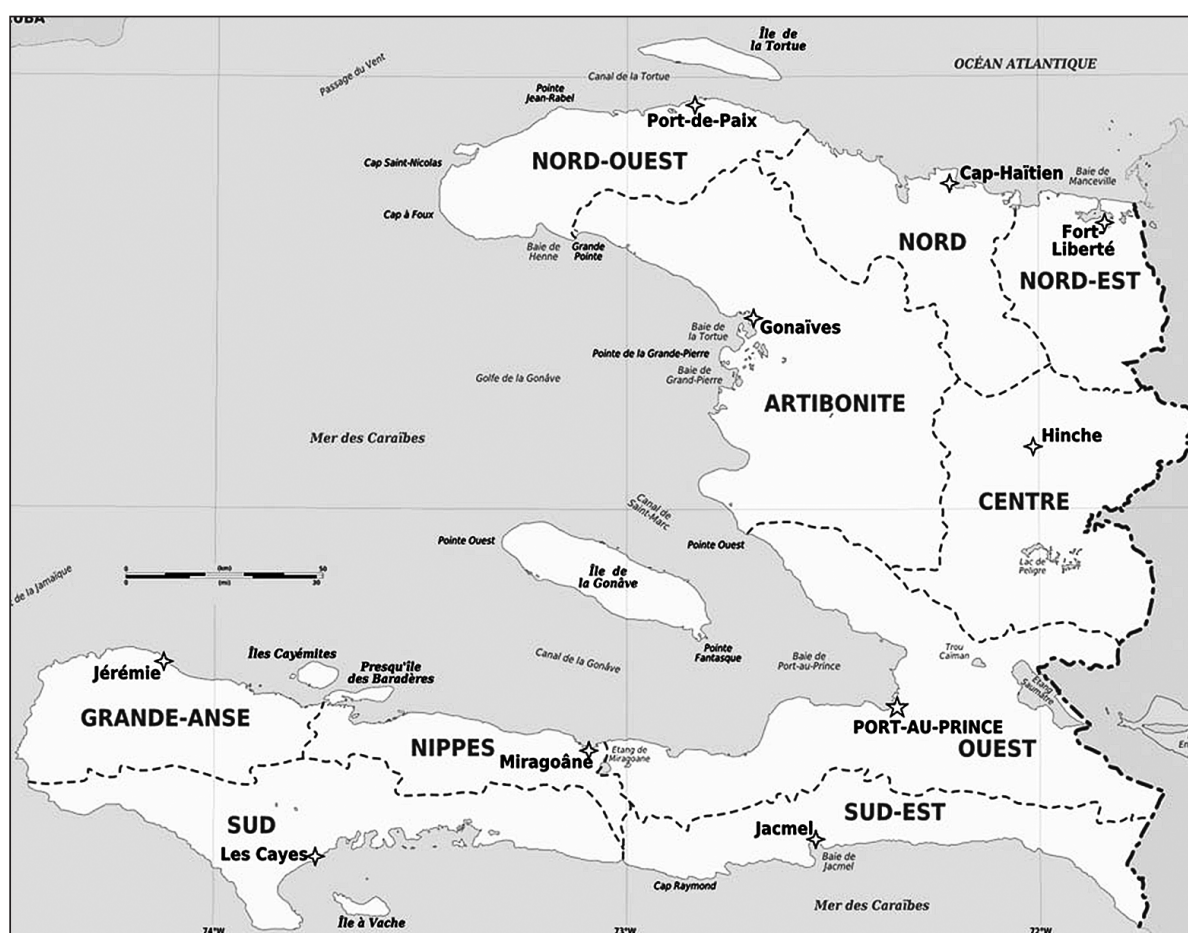
⁴ See Kolbe et al (2010a), Gauthier (2008) and BBC (2008).

⁵ Using a standardized approach to sampling and data collection allows researchers to compare population groups including specific vulnerable populations as well as to examine the differences across geographic regions. See Kolbe and Muggah (2010) for an explanation of how this approach facilitates the swift collection and analysis of data after a disaster.



to generate generalizable findings, the team used random sampling methods within communities determined by relief organizations and the Haitian government as areas impacted by the hurricane. A total of 1,355 households were included in the study with a response rate of 84.7 per cent.⁷ Surveys were conducted in the north during a six day period beginning November 11. Surveys in other regions were conducted during the week after Hurricane Sandy, beginning October 28.

Figure 1. Geographic Departments of Haiti⁸



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The Igarapé-led team used a standardized methodology applied in earlier assessments of service delivery, health and victimization. Using Random GPS Coordinate Sampling (RGCS)⁹ the team visited specific areas and randomly selected a household to participate in the study. In all cases an adult living in the household was randomly chosen – based on which member had the most recent birthday – to complete the survey. The respondent was then interviewed by a two-person team who administered the survey questions and recorded responses using a tablet-based data entry program.¹⁰

⁷ A total of 1,600 households were selected for the study. These included 900 households in Grande-Anse, 300 in Gantheir and surrounding area in the Ouest department, and 400 in rural communities within a 40 mile radius of Cap Haïtien in the Nord department. Of the 1,600 households, 103 refused to participate. The remaining households were visited three times but an adult over the age of 18 who was capable of consenting to participate in the study was never found at home.

⁸ Map courtesy of Wikipedia Commons.

⁹ For more information on RGCS as a sampling method consult Shannon et al (2012) as well as Kolbe et al (2010a).

¹⁰ Respondents provided information about their own experiences as well as the experiences of all other household members. A household member was defined as

No personally identifying information was collected. At the conclusion of fielding, data was downloaded and analyzed using SPSS 17.0, a standard statistical software program.¹¹

Demographics

The demographic profile of Haitian respondents was comparable to earlier surveys conducted by the team. The average age of respondents was 29.5 years (SD: 10.9 years). Overall, 52.8 per cent of the respondents were female, which is similar to the percentage of females in the general population. In areas surveyed, 1,319 of the households said they work the land for profit, with cultivating the fields being most commonly reported followed by for-profit animal husbandry and harvesting of fruit or nut trees.¹² Even the small number of households featuring multiple adult wage earners employed in other occupations still reported farming as a significant part of their income.¹³ Of those who did not engage in farming activities for profit (n=36), all but three reported being financially supported by family or a romantic partner who received all or part of their income from farming.

Damage and Losses

There were a wide range of damages and losses attributed to Hurricane Sandy and the subsequent November 2012 flooding. For farmers, the post-hurricane situation was especially dire with 68.3 percent (n=907) reporting that their crops were destroyed by the hurricane, 77.3 percent (n=1030) losing seeds, seedlings, or tubers needed for planting a new crop, and 73.0 percent (n=973) reporting the loss of farming equipment and tools (see Figure 2). Due to differences in physical geography (terraced mountain plots, plains, high desert and low-land farming) as well as differences in crops routinely planted in these areas and their harvest dates, households in the northern part of the country were more likely to report damage to their home but less likely to report the partial or complete loss of planted crops, or of supplies, seeds or tubers needed for planting in the future.

an individual who “lives in this same house with you and shares money, food, and living space, regardless of whether they are related to you by blood or marriage. A household member can include a romantic partner, a roommate with whom you share money equally, or even a friend’s child that lives here all of the time that you look after.”

11 The research team had initially planned to survey a third area outside of the city of Les Cayes in the Sud department during the first round of data collection. However, this plan was changed after a leader of the research team was a victim of a serious crime in Grande’Anse. See Kolbe and Muggah (2012). As the geography of the Sud department differs, with some low lying lands used for cash crops, it is likely that the financial impact of crop losses would have differed had this area been included in the study. Thus, the current findings could underestimate the losses experienced by farmers as a result of Hurricane Sandy.

12 Most of the households that reported harvesting fruit or nuts from trees did not report cultivating the trees. Fruit trees appear to be regarded as communal property unless they are located on property known to belong to a local resident.

13 Of the 1,355 households surveyed, 411 had one or more adult currently living in the homes who was employed in another occupation. Mostly commonly reported occupations included being a business owner/manager, charcoal production, construction and home services including masonry and plumbing, teaching, and transportation-related businesses such as driving, auto mechanics, and having a motorcycle taxi service. Farming products were sold cooperatively, to corporate buyers, individually to locals, individually at the market, and to an individual third party who then resold the products at street markets (often in urban areas).

**Figure 2. Damages and Loss Attributed to the 2012 Storms (n=1335)**

Reported damages and/or losses	Hurricane Sandy (n=1121)	November Floods (n=234)
Home	37.8 (424)	70.9 (166)
Cooking hut/area	89.4 (1002)	81.6 (191)
Food we intended to eat this month	85.7 (961)	81.2 (190)
Food we saved to eat later in the future	47.5 (533)	64.5 (152)
Water storage container	19.4 (218)	10.3 (24)
Bedding/mattresses	37.5 (420)	88.0 (206)
Clothing	30.9 (346)	43.2 (101)
Household cooking equipment	50.6 (567)	42.3 (99)
Valuable household items*	8.5 (95)	11.6 (27)
Tools and supplies necessary for farming	77.2 (866)	45.7 (107)
Seeds, roots and tubers for replanting/re-harvesting	80.3 (900)	55.5 (130)
Crops in the field which had not yet been harvested	72.5 (813)	40.1 (94)
Important papers, land deeds, or identification cards	2.9 (32)	6.0 (14)
Family photographs, letters or memorabilia	6.7 (75)	9.4 (22)
Latrine overflowed into area in which we live **	42.8 (479)	27.8 (65)

* These included items which cost USD \$20 or more.

** This included sewage overflows into the yard of the home, which is where most Haitian households carry out cooking and washing activities.

Immediate Food Needs

As in past surveys conducted by this team, “food security” was measured using the United States Department of Agriculture *Food Security Scale* (USDA Scale) and the World Food Program’s *Food Consumption Score* (FCS).¹⁴ The USDA Scale queries respondents about hunger as well as strategies used in response to shortages in food supplies including eating less nutritious or poor quality food, reducing the size/frequency of meals, and feeding children less often. The USDA Scale was modified according to acceptable procedures to record measure food security in the previous seven days. The FCS measure records foods eaten by all household members in the previous seven days and is used to derive both a numerical score as well as a categorical variable identifying the household’s food consumption as poor, borderline or acceptable.

14 See Bickel et al (2000) and WFP (2008).

Overall, food security was poor in the immediate aftermath of the storms with nearly 70 per cent suffering from moderate or severe hunger (see Figures 3 and 4). Although households in the northern areas of Haiti were slightly more likely to have borderline rather than poor food consumption (according to the FCS) both groups of storm survivors reported a lack of sufficient food to meet their daily needs. Some families experienced severe food shortages with 22 households reporting that one or more adult household member had not consumed solid food on at least five of the previous seven days. Of breastfeeding women, nearly 80 per cent reported an inability (during the week after the storm) to produce enough milk to meet the needs of their baby.¹⁵

Figure 3. Food Security of Storm Survivors as Measured by the USDA Scale

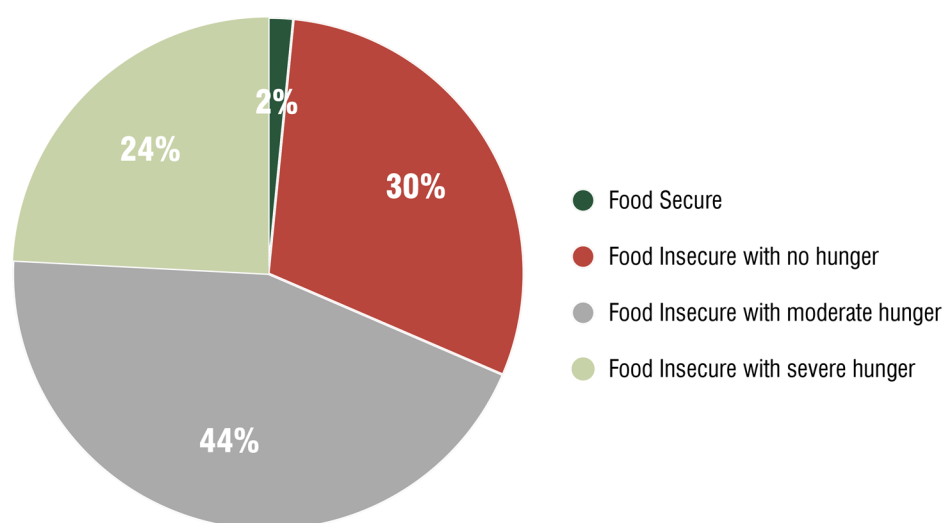
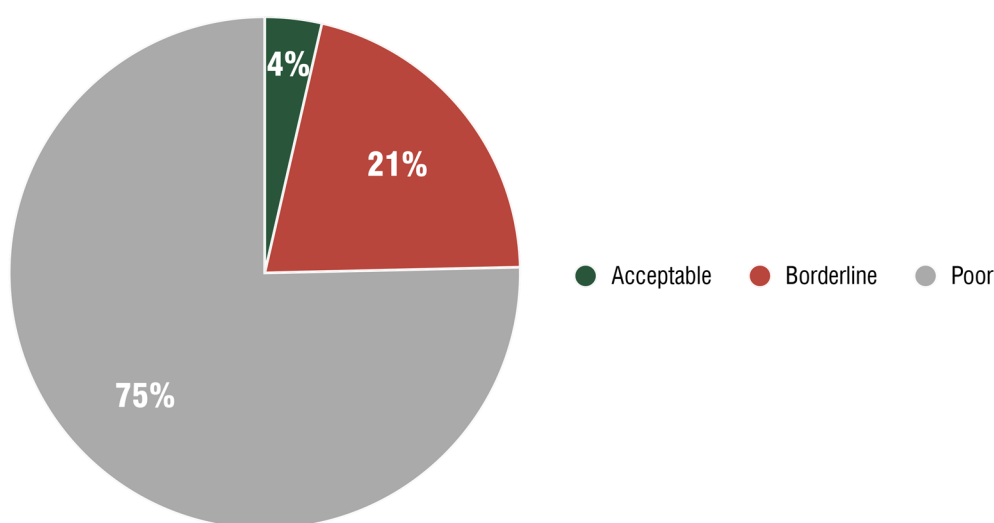


Figure 4. Food Consumption of Storm Survivors as Measured by the FCS



¹⁵ Although stress, illness, dehydration and other factors can inhibit breast milk production, this problem can also be blamed on insufficient food consumption.



Similar to findings reported by the authors after the 2010 earthquake, households that received financial remittances from family and friends abroad were more likely to be food secure after the storm than those who received no remittances.¹⁶ Receiving any money at all from abroad in the 12 months prior was associated with an 8.1 times lower likelihood of experiencing hunger in the post-storm period. Predictably, education and employment also constituted protective factors for post-storm food security with a secondary school education, trade school training or current employment (either full or part time not including self-employment) of a household member over the age of 18 making the household 4.5 times more likely to have adequate or borderline (rather than poor) food security.

Households reported relying on poorer quality food and consuming less protein than usual in the week after the storm. Indeed, more than half of all households with children said they reduced the size and frequency children's meals during the post-storm period. Fruit, a common and readily available snack in rural areas, was less available after the storm and households that had previously relied on picking fruit to supplement their diet said this was no longer available as an option after the rain and wind knocked most fruit off the trees. As one woman observed: "a fruit tree saves you during difficult times. If you're hungry you can always send a child out to pick some mangos or bring back bananas. Every day we ate fruit. Now you can't. Even the unripe fruit was torn off [of the trees] by the wind."

Future Food Security

It is important to stress that population groups were differentially affected. For example, crop losses affected some farmers more than others. Those growing starchy root vegetables and tubers such as *patat* (a white sweet potato), yams, and cassava reported little loss of actual crops (although farmers did claim that tools, home and other supplies such as fertilizer were lost or damaged by the storms). On the other hand, those growing more fragile or above ground crops including beans, peas, vine vegetables (such as squash, peppers, tomatoes and eggplant), carrots, beets, scallions, garlic, hard red wheat, lettuce, and cabbage were more likely to report losses after their fields were flooded, crops were washed away, or were covered in mud.

For some areas the peak harvest season ended shortly before Hurricane Sandy. As a result, many households – particularly those growing cash crops such as corn or beans – had already harvested most of their crops and stored them for future consumption or sales.¹⁷ Half of all farmers reported cultivating crops that are left in the ground after harvesting to regrow during the next season including sugar cane, sorghum, yams, pigeon peas, millet, cassava, potatoes, *patat*, and guinea corn. These farmers reported that some of the crops would likely survive despite the rains but that tubers such as yams and potatoes are often moved by the mud slides and rain to adjacent plots or open fields, requiring farmers to replant after flooding.¹⁸

16 See Kolbe et al (2010a) and Kolbe et al (2010b).

17 Beans and corn were the most commonly reported cash crops cultivated by respondents; 80.5 per cent of all households growing beans and/or corn had already harvested some of their crops before the storm.

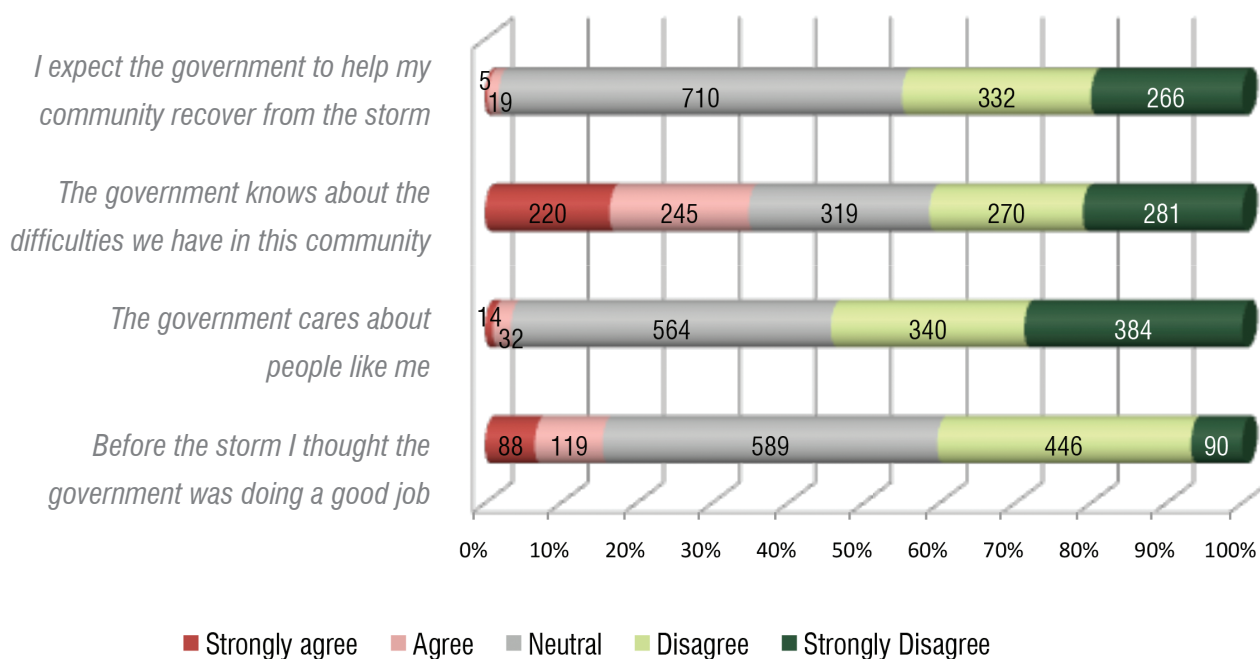
18 *Patat*, in particular, was noted by farmers as a crop that fares well after the hurricane season. At the time of the survey some households had already begun collecting and reburial *patat* cuttings to take advantage of water-drenched soil. Frequently cooked by boiling and eaten alongside plantains and other tubers for breakfast, a medium sized *patat* (weighing 114 grams) provides two grams of protein and nearly four grams of dietary fiber in addition to health-promoting amounts of potassium, iron and vitamins A, C and B6. See for instance, Simmone et al (2004). Despite the nutritional benefits of the *patat*, its consumption is often eschewed by city-dwellers who view it as a food for poor rural people.

Haiti's future security situation over the next 12 months looks bleak. While sorghum, millet and cassava plants are reported by farmers as the most likely crops to survive the storm and produce an adequate harvest during the next growing season, other crops were partially or completely destroyed. Haiti's most affordable and nutritious foods are locally grown tubers, vegetables, grains, indigenous fruits, and legumes. With three quarters of the farming households surveyed in three of Haiti's ten departments lacking the seeds, cuttings and tubers needed to cultivate their fields during the coming growing season and two thirds of those crops still in the ground destroyed, it is likely that the country will be forced to import more (expensive) food from abroad to meet the needs of the local population.

Access to State Services

Rural residents reported a complete absence of municipal services in the week after the hurricane including no organized removal of debris blocking roadways and little or no contact with civil servants, police or other government representatives after the earthquake. The lack of government response slightly decreased respondent's already low confidence in the current administration (see Figure 5).¹⁹ Even local municipalities complained that they had no help or information was getting to areas affected by flooding. As one mayor in rural southwestern Haiti said six days after the hurricane, "I haven't heard from [the capital]. ... People are coming to me for help. Their homes were washed away. ... I have nothing to say to them. I can only go with my own hand to help dig things out of the mud."

Figure 5. Perceptions of state service provision



¹⁹ See Kolbe and Muggah (2011) for information on confidence in state institutions before and after the 2010 earthquake.



Access to Potable Water

Although less than a quarter of those surveyed said they used potable water before the storm, more than 80 per cent agreed that treating water before drinking it could help prevent infection with cholera and other diarrheal diseases. During the week after the storm only 96 of the 1,335 households surveyed said they were drinking treated water. Methods used by survey respondents for treating water included boiling, leaving in the sun all day with the seeds of a local tree submersed in the water, bleach, tablets, and in one village, an NGO-supplied bio-sand filter. However nearly a fifth (n=220) of households surveyed had lost their water storage containers in the storm; such containers are necessary for treating as well as transporting water.

Worryingly, 40 per cent of respondents stated that the household's toilet overflowed into the home or other living space, potentially contaminating supplies and putting children and vulnerable adults at risk for diarrheal diseases after inadvertently consuming contaminated food or water. Indeed, nearly a third (n=392) of the households surveyed reported that one or more household members currently suffered from severe diarrhea. Of those households whose toilet facilities overflowed, two thirds reported that household members were forced to relieve themselves outside as their latrines were not currently usable, compounding the spread of human feces in current habitations.

Mitigating Future Food Crises

There is no quick fix to the emergency situation created by the 2012 hurricane season. Even so, it is possible for the Haitian state, international donors and non-governmental agencies to coordinate activities which will reduce the negative impact of storm-related losses on the availability of food in Haiti. If provided with adequate supplies of seeds, nearly all of the surveyed households said they would be able to plant crops with a short growing season to make up for the anticipated deficits in Haiti's short-term (2-6 month) food supply. However few respondents reported that such action is likely to be taken by either international organizations or the Haitian state. When asked how the international community, non-governmental organizations and the Haitian government should respond, farmers favored financial remuneration for their losses, direct aid in the form seeds²⁰ and fertilizer, as well as Cash for Work (CFW) projects rather the direct distribution of food (see Figure 6).

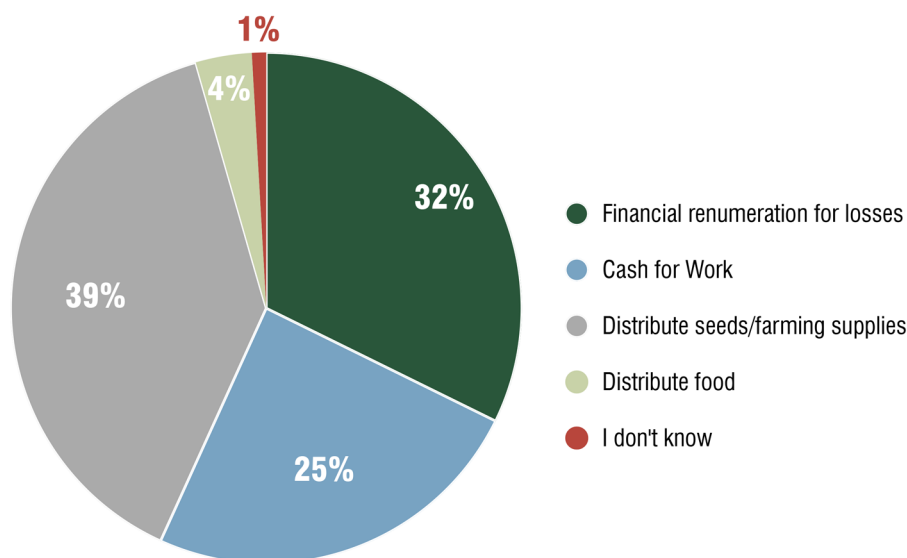
Short-term CFW projects and distribution of seeds/fertilizer may very well be the best way to mitigate Haiti's food shortage. Though some complain that CFW projects take farmers away from their fields and prevent them from working, short-term projects lasting 3-6 weeks may give farmers the capital they need to replace lost supplies and equipment and enable them to return to productive farming. A 2012 evaluation of internationally-supported CFW programs operated after the 2010 earthquake found that participants who received cash were more likely to be food secure months after their 3-6 week stint in the work project; they were also less likely to experience severe hunger than both non-participants and participants who only received food in payment.²¹ This could be because people who get cash are able to invest the

20 Half of those who specified this option said they would not, however, agree to plant genetically modified seeds. Though the Haitian Ministry of Agriculture does not specifically ban genetically modified organisms (GMOs), in recent years voodoo leaders have spoken out against GMOs while influential peasant organizations have demonstrated against the use of hybrid and GM seeds. After the 2010 earthquake, farmers in the area of Papay publically burned 475 tons of hybrid seeds donated by agricultural giant Monsanto.

21 See WFP (2012).

money directly into expanding or covering losses in their family business; this in turn can help meet their household's future needs and provide a safety net in the event of future emergencies.

Figure 6. What's the best way for the government, NGOs and the foreigners to address food shortages caused by the storm?



Participants and their households aren't the only beneficiaries of post-disaster CFW and seed distribution programs. Unlike the direct distribution of food, which may harm the local market by driving down prices of locally grown foodstuffs, CFW and seed distribution programs can be used to stimulate the productivity of small farmers, helping them recover from the temporary emergency experienced after the disaster and facilitating their speedy return to food production activities. Agencies may wish to consider combining CFW with seed and farming supply distribution to encourage farmers to quickly return to their fields by giving both cash (which can be used for immediate needs) as well seeds and other supplies to participants.

Though not widely used in Haiti yet, an emerging tool for addressing the needs of small-scale agricultural producers is micro-insurance. Providing Haiti's small farmers with crop insurance can mitigate the risk of loss due to natural disasters or other ecological irregularities (for example, excessive rainfall or drought). One of Haiti's most well-known microfinance providers, Fonkoze, has begun offering catastrophic event insurance to all of their loan clients to diffuse the personal economic impacts of disaster; participants regularly pay a small fee to opt-in to the program and are covered for most losses.²² The provision of an affordable crop insurance product can address the problem of food insecurity as well by allowing farmers to recover quickly after a disaster and to grow their business without the fear that their investment will be lost during the rainy season.

Several difficulties, however, pose challenges to the growth of an agricultural micro-insurance industry in the Haitian context. First, emergent micro insurance providers must begin their operations with a substantial amount of capital in order to be able to honor claims from unlikely catastrophic events. Second, insurers must cover clients from various

²² For additional information go to, <http://fonkoze.org/ourprograms/kore-w-microinsurance.html>.



regions and who produce a variety of crops to hedge against being dramatically impacted by destructive climate events. This requires a lot of staff-time and travel, which ups operating costs. Third, there is an incentive for clients to make fallacious insurance claims since agricultural impacts are difficult to verify. An innovation to address this problem (in part) is the use of district-based rainfall gauges to evaluate claims. If a region has insufficient (or excessive) rainfall, everyone in the district gets a payout; the reverse is true as well.²³

Conclusions

The 2012 hurricane season once again exposes a glaring omission in Haiti's development trajectory over the past half century. Agriculture is the backbone of Haiti's economy, particularly outside of the country's primary cities. There are more than three million farming families in the country. Yet as countless observers have noted, agriculture has been systematically marginalized for decades in favor of more manufacturing-based development.²⁴ For years Haiti has been encouraged to build factories while not simultaneously investing in agriculture, education and other more sustainable forms of development to mitigate natural hazards.²⁵ As a result, when disasters hit, Haiti's rural population is especially exposed to food insecurity.

This *Strategic Note* sheds light on the extent and scale of food insecurity in Haiti following the 2012 hurricane season. It also highlights a number of possible entry-points to mitigate future risks of hunger. While structural factors loom large – not least the precarious livelihoods of Haiti's rural population and infrastructural challenges – there are some cost-effective entry points that can save lives. Specifically, it shows how specific types of farmers are likely to be more affected than others. Strategies that promote cash in exchange for work and facilitate remittances are also extremely effective at reducing prolonged hunger. Micro-insurance for small farms and creative methods of distributing seeds and farming supplies as partial payment for participants in CFW programs are also viable options.

In a country plagued with infrastructural problems and chronic underdevelopment, Haiti faces an uphill battle in addressing the needs of agricultural producers following natural disasters. No matter what tactics are taken in the coming months it is clear that the Haitian government, civil society and the international community must respond proactively before widespread hunger spreads to the cities. This looming crisis can be diverted with interventions that strengthen Haiti's agricultural infrastructure from the ground up while promoting sustainable solutions that build on the strengths of Haiti's rural communities so the benefits last long after the funding runs out.

This is also an opportunity for those who “do” development in Haiti to get it right. Lesson learned from responses to the 2010 earthquake can be put in place, indigenous leaders and forms of community organizing can be integrated into assessment and planning activities, successful interventions tried during 2010 and 2011 can be expanded and tested (thus creating an evidence base for post-disaster response in Haiti), and resources can be fairly distributed to the intended beneficiaries without excessive waste. A coordinated and effective response is possible. But this effort demands the will of international donors, NGOs, indigenous community associations, and the Haitian government to act -- rather than react -- to prevent the coming food crisis.

23 See Morduch (2004) for more on rainfall insurance.

24 See, for example, Maguire (2012, 1981).

25 See Collier and Warnholz (2010) and Green (2010).

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