

Mission in Action

The iF Foundation has been involved in economic development work in Haiti since 2007, shifting its primary focus to agriculture in July, 2013. We have embarked on an ambitious multi-year initiative to transform farming communities in four communes in Northern Haiti, three of which are located approximately 15 miles outside of Cap Haitien, the second largest city in Haiti. The iF Foundation intervention areas are home to over 60,000 people who live without access to running water or electricity. It is estimated that 90-95% of the population in this area survives on subsistence farming.

Intervention Areas of the iF Foundation	
Commune	Locality/Village
I. Milot	<ol style="list-style-type: none"> 1. Coronel 2. Bordes 3. Jean Michel 4. Descotieres 5. Dubre
II. Plaine du Nord	<ol style="list-style-type: none"> 1. Larevoie 2. La Suisse 3. Chiron
III. Acul du Nord	<ol style="list-style-type: none"> 1. Dericourt 2. Iladan 3. Mathone 4. Laplange 5. Tova
IV. St-Raphael	<ol style="list-style-type: none"> 1. Logalit 2. Walondri 3. Kanpapay 4. Gwasimal 5. Kabledjin 6. Ba Reji 7. Labisent 8. Akasya

Agricultural Programs

Haitian farmers are the lowest yield producers in the Western Hemisphere, trapping them in survival mode, living from hand-to-mouth. Haitians are hardworking people and possess the determination and drive to build a better future for their families. The factors that impede these farmers are well-known: lack of good seed, no access to fertilizer, minimal mechanization, lack of technical assistance for identifying and solving common problems with plant disease, destructive insects and soil fertility.

The iF Foundation’s agricultural programs empower farming families to achieve economic independence through an innovative multi-faceted agricultural program. The Foundation is offering a solution to breaking the cycle of dependency, not a “a handout.”

In discussions with members of the community, local producer groups and the Ministry of Agriculture, the Foundation has developed a strategy and vision that has four main components:

1. **Increase staple crop production** (rice, corn, peanuts) by offering credit for seed, fertilizer and land preparation, and technical assistance from planting through harvest
2. **Increase farm family revenue** by introducing high-value crops such as tomatoes, hot peppers, bell peppers, cashew, mandarins, off-season avocado and export-grade mangoes
3. **Establish a commodity exchange** to link farmers to other distribution channels, and introduce price and weight transparency to buying and selling
4. **Provide technical training** to enable farmers to understand both the science and business of agriculture, to make informed choices as to what to plant and when to plant

Each step addresses a critical weak link in the value chain for agriculture. For example, Simply switching corn planting densities increased yields from 626kg/hectare to more than 2400kg/ha.

Through our new innovative program, local farmers are given access to interest-free credit to pay for seed, land preparation, fertilizer and other inputs needed to bring a crop to harvest. Rather than disbursing cash, the Foundation sources inputs and provides land preparation, high quality seed and other critical materials to the beneficiary farmer. This approach addresses a key obstacle to Haitian farmers, as good seed, mechanized land preparation and fertilizer are usually not available. The loan is repaid at time of harvest. Trained agronomists and technical staff work alongside local farmers, teaching them improved techniques to grow crops and link them to buyers at harvest time. In addition, staff train the farmers on post-harvest activities, which include basics like proper drying and storage of peanuts, and marketing initiatives to help the farmers obtain the best possible price for their crops.

Our Methods

- **Improved Staple Crops**
quality corn, rice and peanuts
 - **Corn**
Maize is a key staple crop in Haiti, but traditional cultivation methods make it unprofitable; a farmer is guaranteed to lose money on every crop. The iF Foundation has undertaken several corn-related initiatives towards making corn a viable and profitable endeavor for farmers. One of those initiatives was a pilot project with 83 farmers, which consisted of reducing the planting distance and only planting one seed per pocket. This simple approach increased yields, while lowering overall seed cost. For the first crop season of 2020, the iF Foundation entered a collaboration with an organization called New Roots to produce corn for poultry feed. We expect to have about 100 farmers taking part in this collaboration.

- **Rice**

Approximately 25% of iF farmers plant rice. For those having access to irrigated land, this is a good cash crop, though there are many ways to increase profitability without asking farmers to change the way they plant. Since 2013, we have been evaluating different approaches to harvest and post-harvest processes. We have not yet been able to implement these approaches at farmer level. We have, however, been able to introduce local growers to a Dominican variety known as Jaragua. This variety produces more rice per hectare and has better flavor than the TCS10 and Prosquisia 4 varieties introduced by USAID and Taiwan, respectively. Jaragua is in high demand by local consumers and merchants. Drought and lack of mechanization remain the major challenges for farmers. As a result, the vast majority of our rice farmers lost their crops during the 2019 season, making it difficult for the Foundation to support rice farming for the first season of 2020.

- **Peanuts**

Peanuts have been the greatest success story to date for the iF Foundation and beneficiary farmers. At the start of 2014, no farmers were planting peanuts in our region. Successive crop failures, low yields and limited access to markets made peanuts a loss leader on par with corn. Starting with twelve farmers in March 2014 (all men), peanuts have become a “must-have” cash crop with revenue as high as \$758 from a one-acre field. For the peanut season completed in August 2016, 313 farmers including 67 women planted peanuts. Land under cultivation with peanuts increased from 3.52ha in 2014 to 123.84ha in 2016. Local production went from zero in 2014 to 27 tons for the just-completed harvest. What changed the dynamic of peanut farming from loss leader to profit center? The key steps:

1. introduction of better seed with higher germination rates
2. training to plant in rows
3. training on proper application of fungicide, and making it available at the proper time
4. training on proper harvest and post-harvest processes to minimize loss
5. provision of proper bags and training on proper drying to avoid aflatoxin contamination
6. free testing for aflatoxin in our lab (aflatoxin is a metabolic byproduct of the *Aspergillus* mold; it is highly toxic to animals and is a suspected carcinogen in humans; contamination levels >10ppb make these peanuts unsellable to institutional buyers)
7. linkage to markets including large institutional buyers; the Foundation serves as a commodity exchange brokering the sale and insuring transparency/fairness in the transaction

MFK (Meds & Foods for Kids) is currently our biggest buyer, with purchases of 18 tons of peanuts for the 2019 season. The Foundation is the second largest buyer, with purchases of over 8 tons, mainly to support peanut butter for the school breakfast program. We continue to work on addressing the deficiencies in the production cycle that suppress profitability. Our goal is to establish a \$400 per season baseline for net profitability, with a long-term target of \$750-800 per acre per season. For the 2019 crop season, the biggest checks paid to farmers after reimbursement of their credit were between \$661.32 and \$784.95, putting us in the range of our long-term target. This may seem modest to some, but most Haitians live on less than \$1 per day. Even the baseline net income will permit families to eat every day and send their children to school.

- **Compost and Vermiculture**

using worms and laboratory testing to increase soil fertility

Vermiculture is the technique of using earthworms to recycle organic material and agricultural waste, most of which is usually burned, into an improved soil called vermicompost or worm compost. The worms ingest waste materials and excrete nutrient rich compost. The entire process takes two months, with the worms doing most of the work. Trials in our own fields on hot peppers, bell peppers, tomatoes and cabbage show a consistent pattern: plants start producing 30 days early and continue producing longer, resulting in yield increase of 50-100%. Besides vermicompost, the Foundation also produces hot compost. Based on the results of our trials, we are now using mostly compost in all our vegetable fields. In 2019, we produced nine tons of vermicompost at our facility. The current goal is to include compost producer groups in all our intervention areas, enabling farmers to reduce or eliminate the need for chemical fertilizer, while improving soil health. This important component of our overall agricultural initiative will also make productive use of agricultural waste and reduce overall costs, while creating a new source of revenue for compost producers.

Our laboratory helps the program identify issues with soil health and propose solutions. It also establishes the quality of inputs provided within the Farm Input Program prior to distribution, as well as the quality of products produced by farmers in the program, thus assuring food safety for corn and peanut products. Testing regimens include soil chemistry/biology, moisture content, Aflatoxin determination and germination testing. These are important activities for improving the quality of our services in the FIP and marketing our farmers' products.

In 2019, our lab performed 955 tests, including 184 soil tests, 304 Aflatoxin tests, 424 humidity tests and 43 germination tests.

- **Agricultural Research**

separating iF from other organizations doing similar work

Research is an important component of the iF Foundation's agricultural program in our catchment area. Research activities are designed to evaluate alternative materials and methods to improve FIP. Our research mainly focuses on evaluating plant materials, irrigation and farming approaches, and mechanization. Climate resilience requires rethinking old approaches and testing new ideas. New crops or varieties may address this need or create new revenue streams. Over the years, we have completed several evaluations, the results of which have been applied in our programs, such as drip irrigation, and improved vegetable productions. In 2019, we completed the evaluation of 3 biofortified crops including rice, beans, and corn. We are

currently in the phase of multiplying biofortified corn. iF has three weather stations on the ground to track long-term climate trends, supplemented by 20 pluviometers placed in different microclimate zones to measure differential rainfall. We have been mapping soil health and fertility (with USDA NRCS), and testing nutrients and microbiology in our own lab. This data will help our farmers make better cropping decisions, minimize inherent agricultural risks and increase net revenue. A listing of completed and current/planned research projects is below. For additional information on iF Foundation research projects please contact Ms. Edlyne Cange at ecange@if-foundation.org.

Completed Research

- Improved tilling and planting/land management
 - Improved vegetable production (hot peppers, sweet peppers, tomatoes, cabbage, leeks)
 - SRI rice (in collaboration with Cornell University SRI Institute)
 - Alternative strategies for weed control (mulch, intercropping, mechanical – IFDC-Bangladesh, Sustainable Living Center at MUM, Oxfam America, NGVK-India)
 - Optimizing post-harvest processes and milling for rice
 - Yams – minisetting and variety selection
 - Orange flesh sweet potatoes –multiplication and variety selection
 - Poultry feed (in collaboration with Cornell University Department of Animal Sciences)
 - Urea Deep Placement (with IFDC)
 - Rhizobium inoculation in beans and peanuts
 - High-density corn planting corn
 - Peanut variety trials (with University of Georgia and Meds for Food and Kids)
 - Vermiculture/compost tea (with MUM)
 - Foliar disease in peanuts (with University of Georgia)
 - Bio fortified rice, beans and yucca (with CIAT)
 - Childhood nutrition (with Washington University)
 - Regional water management (with University of Illinois)
 - Increasing soil fertility (with USDA NRCS, MUM and Soil Biotics)
 - Drip irrigation systems (with Toro)
 - Tropical sweet corn (with Abbott & Cobb)
- **Tree Production and Beekeeping**
beekeeping and grafting to produce commercial quality trees
 - **High Quality Fruit Trees**
Throughout Haiti, low quality fruit trees are frequently cut down and used for making charcoal for cooking. These fruit trees have no financial value to local farmers, and cutting them down is a major contributor to deforestation. The iF Foundation is introducing high-value grafted fruit trees like mandarin, mango and avocado in our nursery. This nursery is located at the organization’s technical center in Coronel. Using this approach, large quantities of commercial seedlings can be produced in nine months. The Foundation has used this approach to establish several orchards within the community to demonstrate to farmers the benefits of having grafted trees. We have also distributed grafted trees to farmers for planting in their fields. Transforming low quality fruit trees by top grafting is a great way to protect the environment and

generate a much-needed income. Top grafting is the technique used to transform existing low-quality fruit trees, by pruning them and then grafting commercial varieties onto them. In normal years, these grafted branches will start producing export-grade fruit in the next year. If climate conditions allow, the Foundation plans to launch its first top grafting campaign this year.

- **Beekeeping**

A key component of the orchard implementation within the community, the iF Foundation also established hives in the orchards to facilitate tree pollination, as well as produce honey. The foundation has provided training to two of its employees on beekeeping and acquired the proper material for honey extraction.

Laboratory Operations

Farming is a science, and lab testing is essential to cultivate safe, healthy soil and maximize crop yields. iF Foundation instituted its lab operations in 2014, originally running two labs in two different locations, one mycotoxin lab (originally supported by the PMIL program) and one soil lab. In December of 2019, the Foundation began construction on another facility on the site of its technical center, to consolidate its lab activities into one location. This new facility has been operational since February 2020.

Soil testing consists of soil chemistry tests and soil microbiology tests. The chemistry analyzed include macronutrients (N,P, K, Mg, Ca), pH, conductivity, and organic matter, while the microbiology testing is a characterization of the microbial population in the soil. Soil testing is essential in identifying issues with soil health, which is used to propose solutions to local farmers for improving their soil fertility.

In addition to mycotoxin testing, we do germination and moisture testing. Germination testing is utilized to establish the quality of the seeds provided within the agricultural program prior to distribution. Aflatoxin tests are critical to ensure food safety for corn and peanut crops. Aflatoxin testing services are provided for free to farmers in the agricultural program, for every harvest. The program greatly benefits these farmers, because it allows them to meet the sales requirements of institutional buyers and helps them market their products at competitive prices.

Lab testing is vital to the economic development goals of the program, by helping farmers ensure crop health and safety, which in turn supports the farmers' economic independence, enabling them to care for their families' basic needs, improve their lives and contribute to the well-being of the community.