

Oxfam America
Research Backgrounders

Haiti Rice Value Chain Assessment:

Rapid diagnosis and
implications for program design

David C. Wilcock and Franco Jean-Pierre

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Author information and acknowledgments

David C. Wilcock is an independent consulting agricultural economist based in Maine. Franco Jean-Pierre is an agronomist based in the Artibonite Valley in Haiti.

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Executive summary

This rapid assessment of the Haitian rice value chain was originally prepared in support of Oxfam America's livelihoods program, to "develop options for a program to support small-scale rice producers so as to improve household income and enhance the country's food security" (From the assignment terms of reference).

The overall state of the Haitian national rice value chain is poor, despite the substantial production potential in the country. Total rice production has not grown significantly over the past 40 years notwithstanding despite significant financial and technical assistance provided in some geographical areas. The market share of national rice has shrunk dramatically in competition with overly inexpensive imported US commercial and food aid rice, which has become dominant in national diets, increasing the risk of long-term food insecurity.

One of the most important factors in creating this situation is incoherent governmental agricultural sector and national trade policies. One can ask whether the main thrust of these Haitian policies is to promote or punish national production. In addition, poorly functioning services from the government rural development agency for the Artibonite Valley, the Organisation pour le Développement de la Vallée de l'Artibonite (ODVA, which is in desperate need of restructuring), coupled with high land rents and unclear fertilizer policy with "quota problems," have hampered the development of the value chain.

A second major factor is that the *filière* (value chain) is not well organized or coordinated on a nationwide basis. There has been no effective "buy local" campaign led by national political authorities. This omission may not be surprising given the ambivalence of national policy on whether to make national rice production a food security priority.

Additional summary conclusions from this assessment include the following:

- Significant irrigated rice production zones are found in at least six of Haiti's 10 departments. However, the 50-plus-year-old Artibonite valley irrigation system accounts for 75–80 percent of current national production. However, the Artibonite irrigation infrastructure is incomplete and in poor shape, especially second- and third-level canals and drainage structures. Correct rehabilitation of this important national asset is essential to a possible national strategy for the promotion of Haitian rice.

- The Artibonite system is characterized by excessive block-to-block water use, no price for water used by farmers, and consequently no local funds available for system maintenance. Water user groups are starting to be organized, but this effort must be a future priority in the valley.
- Nationwide rice milling and marketing (including inadequate storage facilities) are inefficient, and losses are high, but these losses can be reduced.
- The Intermón Oxfam effort to create a federated network of rice farmer associations and cooperatives in the Artibonite Valley (known as the Réseau des Associations et des Coopératives de Producteurs Agricoles du Bas Artibonite, or RACPABA), which focuses on seed production, improved processing and marketing, and cooperative strengthening, needs to be expanded in the valley and elsewhere in appropriate ways.
- Labor shortages in production zones increase the need for appropriate small-scale mechanization (i.e., *motoculteurs*) that should be managed by farmer, private sector, or cooperative specialists. The purchase and use of larger tractors is less likely to be sustainable.
- Small average farm sizes and extraordinarily low product prices (a result of the flood of imported rice from the US without any tariff protection) are the main drivers of low rice farm profitability that, in turn, makes it difficult for farmers to employ additional hired labor.
- Much of the justification for massive imports of rice rests on the contention that “Haitian rice is not competitive on the market.” Our analysis of available rice price data shows otherwise. TCS10 rice is sold at the same price as imported “Tchako” rice. Local parboiled rice sells at a higher price because of the substantial extra cost in its production.
- Opportunities exist for the use of the agro-ecological System of Rice Intensification (SRI) method to raise paddy yields and reduce per hectare production costs in well-drained irrigated blocks.
- Yield/taste tradeoffs and rice variety choices (among TCS10, PQ4, Sheila, 20 other local varieties, etc.) are complex and merit further applied field-level research.

The third section of this assessment outlines a series of technical assistance options in the following areas:

- Farmer organization
- Value chain coordination, promotion, and advocacy

- Improved data collection and analysis of the costs and returns to national production and marketing
- Farm-level productivity improvements through the following:
 - Better pricing and access to irrigation water
 - Improved seeds, fertilizer, and other critical inputs
 - Improved land preparation through small-scale mechanization and animal traction
 - Better field-level agronomy, including SRI
 - Badly need farm credit for production, processing, and marketing
- Expanding and capitalizing on changes already occurring in post-harvest processing and marketing
- Public-private partnerships in targeted applied technology research and development

In terms of a vision for the future, it is our view that with better value chain coordination, improved national rice trade and other policies, and improved extension of productivity-increasing technologies, Haiti could optimistically expect to increase the proportion of national production in rice consumption from the current 20 percent to 50 or 60 percent over the next 10 to 15 years.

What is needed is a national transitional strategy to gradually reduce imports, increase national rice marketed surpluses and rice farmer income (largely through productivity increases and marketing-chain loss reduction), and encourage productivity increases in other national food value chains to promote a return to more balanced and locally sourced diets.

Résumé

Malgré le potentiel de production important du pays, la filière de riz haïtien est dans un état assez affligeant. En dépit de l'aide financière et technique substantielle fournie dans certaines zones géographiques du pays, la production totale de riz n'a pas augmenté de manière significative au cours des 40 dernières années. Avec la concurrence du riz importé, principalement des États-Unis (soit à des fins commerciales soit sous forme d'aide alimentaire), la part de marché national de riz Haïtien a diminué de manière spectaculaire. Ce riz importé est devenu dominant dans les habitudes alimentaires nationales, augmentant le risque d'insécurité alimentaire à long terme. Étant donné la situation, Oxfam America a pris l'engagement de programmer des activités dans la filière de riz Haïtien et lance cette étude diagnostique dans le but de : « développer des options pour un programme d'appui aux petits producteurs de riz afin d'améliorer le revenu des ménages et la sécurité alimentaire du pays » (voir les termes de référence de l'étude).

Un des facteurs les plus importants pour expliquer cette situation est l'incohérence des politiques agricoles et commerciales nationales. On peut se demander si l'objectif principal de ces politiques haïtiennes est de promouvoir ou de punir la production nationale. De plus le mauvais fonctionnement des services de l'Organisation pour le développement de la vallée de l'Artibonite (ODVA, qui a besoin désespérément d'être restructuré), accouplé avec les rentes foncières élevées, la politique d'engrais peu claire avec « des problèmes de quotas », ont entravé le développement de la filière.

Une deuxième conclusion importante est que la filière n'est pas bien organisée et coordonnée à l'échelle nationale. Les consommateurs n'ont pas vu une campagne « acheter local » menée par les autorités politiques nationales. Ce n'est pas étonnant compte tenu de l'ambivalence de la politique nationale concernant la promotion de la production et la consommation du riz national.

Un certain nombre d'autres conclusions sommaires de cette évaluation sont:

- Il existe d'importantes zones de production de riz irrigué dans au moins six des 10 départements d'Haïti. Cependant, le système d'irrigation dans la vallée de l'Artibonite (vieux de plus de 50 ans) comprend 75–80 pour cent de la production nationale du riz. L'infrastructure d'irrigation de l'Artibonite est incomplète et en mauvais état, surtout les canaux et les ouvrages de drainage secondaire et tertiaire. La réhabilitation correcte de cette importante ressource nationale est essentielle pour une éventuelle stratégie nationale de promotion du riz haïtien.*
- Le système de la production de l'Artibonite est caractérisé par l'utilisation excessive de l'eau au niveau de « bloc », par le manque d'un prix réel de l'eau utilisée, et par*

conséquent, le manque de fonds locaux disponibles pour l'entretien du système. Les utilisateurs de l'eau commencent à s'organiser en groupes, mais cela doit être une priorité pour l'avenir dans la vallée.

- Le décorticage de riz et sa commercialisation à l'échelle nationale est inefficace et les pertes sont élevées, cependant il est possible de les réduire. (Les installations de stockage sont inadéquates en général).*
- L'effort d'Oxfam Intermón de créer un réseau des associations et coopératives de producteurs de riz dans l'Artibonite (le Réseau des associations et des coopératives de producteurs agricoles du bas Artibonite, RACPABA), en se concentrant sur la production de semences, la transformation et la commercialisation améliorée et le renforcement de l'organisation paysanne doit être développé d'avantage dans la vallée de manière considérable.*
- Le manque de main-d'œuvre dans les zones de production augmente le besoin de mécanisation à petite échelle appropriée (par exemple, les motoculteurs). Ces machines devront être gérées par l'agriculteur, le secteur privé ou des spécialistes coopératifs. L'achat et l'utilisation de plus gros tracteurs est probablement non-durable.*
- La superficie très petite du ferme moyen et les prix de produits extrêmement bas (dû à la grande quantité du riz importé des Etats Unis sans aucune protection tarifaire) sont les raisons principales qui rendent difficiles l'utilisation de main-d'œuvre supplémentaire par les fermiers rizicoles.*
- Une grande partie de la justification des importations massives du riz est la notion que « le riz Haïtien n'est pas compétitif sur le marché ». Notre analyse de données disponibles sur les prix de riz montre que ces informations s'avèrent inexactes. Le riz TCS10 est vendu au même prix que le riz « Tchako » importé. Le riz local étuvé est vendu à un prix plus élevé à cause des coûts de production beaucoup plus élevés.*
- Il existe des possibilités pour l'utilisation du Système de Riziculture Intensive (SRI), une méthode agronomique pour augmenter les rendements de riz et de réduire les coûts de production par hectare, dans des zones irriguées et bien drainées.*
- Tenant compte des variables tels que rendement et goût des consommateurs, le choix des variétés à promouvoir (TCS10, PQ4, Sheila, et 20 autres variétés locales) doit s'appuyer sur une recherche approfondie et appliquée sur le terrain.*

La troisième section de cette évaluation décrit une série d'options d'assistance technique dans la filière:

- Organisation des producteurs*

- *Coordination et promotion de la filière, et un plaidoyer national et international*
- *Amélioration de la collecte des données et de l'analyse des coûts et rapports de la production et la commercialisation*
- *Amélioration de la productivité de la production du riz à travers:*
 - Une meilleure tarification et l'accès à l'eau d'irrigation
 - Des semences améliorées, des engrais et d'autres intrants essentiels
 - Amélioration de la préparation du sol par la petite mécanisation et la traction animale
 - Des techniques améliorées agronomiques, y compris le SRI
 - Le besoin de réhabiliter le système de crédit agricole pour la production, la transformation, et la commercialisation
- *Développer et capitaliser d'avantage les changements déjà en cours dans la transformation post-récolte (moulins plus efficaces) et la commercialisation (achats locaux du Programme alimentaire mondial)*
- *Des partenariats publics-privés dédiés à la recherche technologique appliquée et de développement*

A notre avis, en ce qui concerne une vision pour l'avenir, avec une meilleure coordination de la filière, une amélioration du commerce du riz et des politiques commerciales et agricoles, une amélioration de la vulgarisation des techniques qui augmentent la productivité, Haïti pourrait s'attendre à augmenter la proportion de la production nationale dans la consommation du riz de son niveau actuel de 20 pour cent à peut-être 50 ou 60 pour cent, au cours des 10 à 15 prochaines années.

Pour y parvenir, une stratégie nationale de transition est nécessaire et s'impose pour réduire progressivement les importations, l'accroissement des excédents de riz sur le marché national et le revenu des agriculteurs de riz (en grande partie par des augmentations de la productivité et la réduction de la perte de la chaîne de commercialisation). Il faut aussi encourager l'augmentation de la productivité nationale dans d'autres filières alimentaires pour favoriser un retour à une alimentation plus équilibrée et d'origine locale.

List of abbreviations and acronyms

ANACAPH	Association Nationale des Caisses Populaires Haïtiennes (National Association of Haitian Savings and Loans)
BCA	Banque de Crédit Agricole (Agricultural Credit Bank)
BEST	Bellmon Estimation Studies for Title II (Food for Peace)
CAFON	Coopérative Artisanale des Forgerons de l'Office du Niger (Artisanal Cooperative of Blacksmiths of the Office du Niger)
CLES	Collectif de Lutte contre l'Exclusion Sociale (Collective for Combating Social Exclusion)
CNSA	Coordination Nationale de la Sécurité Alimentaire (National Food Security Coordination Agency)
CPM	Comité de Pilotage Multisectoriel (Committee for Multi-sectoral Pilot Projects)
DR	Dominican Republic
DRC	Domestic resource cost
DSNCRP	Document de Stratégie Nationale pour la Croissance et la Réduction de la Pauvreté (Poverty Reduction Strategy Paper, or PRSP in English)
EBCM	Enquête Budget Consommation des Ménages (Household Budget and Consumption Study)
ECVH	Enquête sur les Conditions de Vie en Haïti (Haiti Living Conditions Measurement Study)
EDH	Electricité d'Haïti (Electricity of Haiti)
FAMV	Faculté d'Agronomie et Médecine Vétérinaire (School of Agronomy and Veterinary Medicine, State University of Haiti)
FAO	Food and Agriculture Organization of the United Nations

FEWSNET	Famine Early Warning Systems Network (a USAID-sponsored food security information collection and dissemination service)
GAA	German Agro-Action
GDP	Gross domestic product
GOH	Government of Haiti
HA	Hectare (equivalent to 2.54 acres)
hp	Horsepower
IADB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
INARA	Institution Nationale de Réforme Agraire (National Agrarian Reform Institution)
IO	Intermón Oxfam (Spain)
IRC	International Rescue Committee
Kg	Kilogram
Km	Kilometer
Lb	Pound
LDCs	Least developed countries
MARNDR	Ministère de l'Agriculture, des Ressources Naturelles, et du Développement Rural (Ministry of Agriculture, Natural Resources, and Rural Development)
MDGs	Millennium Development Goals
MINUSTAH	United Nations Stabilization Mission in Haiti
MT	Metric ton
NERICA	New Rice for Africa
NGO	Nongovernmental organization

ODVA	Organisation pour le Développement de la Vallée de l'Artibonite (Organization for the Development of the Artibonite Valley)
OGB	Oxfam Great Britain
OI	Oxfam International
ON	Office du Niger, An organization of the Government of Mali that operates the Office du Niger irrigation complex
PAM	Policy analysis matrix
PaP	Port-au-Prince
PAPDA	Plateforme Haïtienne de Plaidoyer pour un Développement Alternatif (Haitian Platform to Advocate Alternative Development)?
PIA	Programme d'Intensification Agricole (Agricultural Intensification Program)
PFNSA	Plateforme Nationale de Sécurité Alimentaire (National Food Security Platform)
PQ4	Prosequisa 4 (a tropical rice variety sold commercially in the Dominican Republic and starting to be used more in Haiti)
R&D	Research and development
RACPABA	Réseau des Associations et des Coopératives de Producteurs Agricoles du Bas Artibonite (Network of Agricultural Producer Associations and Cooperatives of the Lower Artibonite Valley)
RENAHSSA	Réseau National Haïtien pour la Sécurité et la Souveraineté Alimentaire (National Haitian Network for Food Security and Sovereignty)
SRI	System of Rice Intensification
TCS10	Taichung Sen 10 (an <i>indica</i> rice variety originally from a research station in Taichung, Taiwan, now grown extensively in the Artibonite)
TTM	Taiwan Technical Mission

USAID

United States Agency for International Development

WFP

World Food Programme

Introduction

This study was carried out using a “value chain” (*filière*, in French) approach that stresses the importance of all levels of the chain, and of all major policies and supporting institutions, in working more harmoniously together to promote increased production and profitability of Haitian national rice. Our intention is to contribute to improved incomes and employment for Haiti’s rural population. Many Haitians and knowledgeable foreigners who were interviewed in this rapid field study stressed the desirability of an increased market share for national rice in an eventual “rebalanced” pattern of national food consumption. These alternative aggregate consumption patterns would include greater consumption of non-rice traditional staple crops for better consumer nutrition (such as being promoted by the large Oxfam Québec project on traditional crops), a lower national food security risk profile owing to lower dependency on imported rice, and greater national food security through higher rural incomes from a more diverse set of viable farm enterprises.

At present, Haiti depends heavily on imported rice, which accounts for approximately 80 percent of total rice consumption. Imports have grown rapidly over the past 15–20 years, partly because of the reduction of Haitian import tariffs (under very heavy US and World Bank pressure) from levels similar to other CARICOM countries (20–25 percent) to their current 3 percent, really just a statistical tax.¹

Study objectives

This study was originally intended to “develop/recommend options for a program to support small-scale rice producers so as to improve household income and enhance the country’s food security,” in support of Oxfam America’s Economic Recovery and Sustainable Livelihoods Program in Haiti. To accomplish this overall objective, the authors addressed a wide range of technical and socioeconomic questions and issues in the rice value chain:

- The current status or “situation” of the value chain
- The key policy/advocacy concerns

1. US Department of Agriculture (USDA) Foreign Agricultural Service, *Global Agricultural Information Network (GAIN) Report on Haiti*, November 2011, and Marc Cohen, “Planting Now: Agricultural Challenges and Opportunities for Haiti’s Reconstruction,” *Briefing Paper* 140 (Oxford: Oxfam International, 2010), <http://www.oxfam.org/en/policy/planting-now>.

- The profile of “the Haitian rice farmer”
- The impact of recent crises (earthquake, cholera outbreak, and political unrest) on the functioning of the value chain
- The role of the Government of Haiti and other key institutional partners
- The potential for improving farm-level and post-harvest productivity and profitability
- The opportunities for Oxfam America in the medium term to make a meaningful contribution to sustainable progress in the value chain

The authors also prepared more-targeted program design advice for OA Haiti Oxfam America in an internal paper that accompanied this general assessment of the state of the Haitian rice value chain.

Contents of this paper

The remainder of this paper consists of (a) an overview of the Haitian national rice value chain and its competition with an unsustainably dominant “imported rice value chain” and (b) a discussion of areas in which the technical efficiency and economic productivity of the national rice value chain can be improved.

Literature review

A number of other documents will be useful to the reader interested in the Haitian national rice value chain. First are two relatively recent rice value chain studies: Budry Bayard’s excellent diagnostic value chain study,² as well as detailed value chain studies of rice, rice seed, and vegetable production done in the Artibonite Valley and funded by the IADB.³ In terms of sector policy and orientation, two new documents from the Haitian Ministry of Agriculture, Natural Resources, and Rural Development (MARNDR) are essential.⁴ For an excellent overview of key policy issues affecting the value chain, see Marc

2. Budry Bayard, “La filière riz en Haïti: Diagnostic global et perspectives” (Association Nationale des Agro-Professionnels Haïtiens [ANDAH], 2007). The study was carried out for ANDAH and Intermón Oxfam Spain with European Union funding.

3. These studies, undertaken by the Canadian NGO CECI and others in 2005, were funded by the Inter-American Development Bank.

4. Government of Haiti (GOH)/Ministry of Agriculture, Natural Resources, and Rural Development (MARNDR), *Haiti: Politique de Développement Agricole* (Port-au-Prince: MARNDR, 2011), and GOH/MARNDR, *Plan National d’Investissement Agricole* (Port-au-Prince: MARNDR, 2010).

Cohen's October 2010 Oxfam briefing paper, "Planting Now."⁵ Among the most recent detailed information on Haitian rice marketing, see the US Agency for International Development's August 2010 Bellmon Estimation Studies for Title II (BEST).⁶ For a good introduction to Intermón Oxfam's 10-plus years of patient and successful activities helping rice farmers in the Artibonite Valley, see Maxime Magloire's external evaluation report.⁷ This Intermón work setting up and supporting the Réseau des Associations et des Coopératives de Producteurs Agricoles du Bas Artibonite (RACPABA), a network of rice farmer associations and cooperatives, was the main inspiration for Oxfam America's interest in also developing a livelihoods support program in the rice value chain. Finally, the Government of Haiti's (GOH's) national food security coordination agency, Coordination Nationale de Sécurité Alimentaire (CNSA), is an excellent source for detailed information on food security, prices, and special reports,⁸ such as the recent one on the impact of cholera on food security in the Artibonite Valley.⁹

The challenge of developing a competitive, high-productivity national rice value chain

High-yield, labor-intensive rice production is one of the most demanding crop value chains in tropical agriculture. These systems are fairly common in tropical and temperate Asia where rice has been produced under irrigation for thousands of years. Attempts to introduce this complex of interdependent technologies in other parts of the world, especially in poorer least developed countries (LDCs) in Africa, Latin America, and the Caribbean, have often met with initial failure owing to the need for farmers and other partners to simultaneously master the following:

- New patterns of water and soil fertility management
- Varietal improvement and correct agronomic practices
- Use of higher-productivity post-harvest techniques to minimize losses in getting good-quality, competitive rice to market

5. Cohen, "Planting Now."

6. US Agency for International Development (USAID), *Haiti Market Analysis* (Washington, DC: USAID/Food for Peace, 2010). This is the "Bellmon Analysis," now called "BEST," required in countries where large amounts of US food aid can potentially provide disincentives to competing national production.

7. Maxime Magloire, "Rapport Final d'Evaluation Externe du Programme d'Appui à la Production et la Commercialisation du Riz dans la Vallée de l'Artibonite" (prepared for Intermón Oxfam, July 2009).

8. See <http://www.cnsahaiti.org/index.html>.

9. GOH/National Food Security Coordination Agency (CNSA), "Rapport d'Evaluation de l'Impact du Cholera sur la Sécurité Alimentaire dans les Zones Bas Plateau Central et Bas Artibonite" (Pétionville, Haiti: CNSA, 2011).

- Development by governments and private sector partners of coherent and cost-effective policies in technology research and extension, trade policies to provide appropriate incentives and reduce price risk, funding for appropriate irrigation infrastructural investment, and value chain coordination

Almost all successful Asian national rice production systems have high levels of government involvement and trade protection to ensure complex system performance, reduce producer risk, and maintain consumer price stability. Haiti has few of these system characteristics. In fact, despite a lack of meaningful protection from unfair international competition and an extremely weak government performance in the provision of essential services, coupled with natural disasters (hurricanes, earthquake, and cholera), the Haitian rice sector struggles on. This perseverance underlines the value chain's inherent potential competitiveness and ability to make a substantial contribution to diversified food security and enhanced rural incomes.¹⁰

The decision to take measures to bring national rice policies into coherence, to begin to allow national production to capture a larger share of national staple food markets, and to contribute sustainably to national economic recovery lies with the Haitian people and their designated representatives. Many international governments and organizations stand ready to help in this endeavor if the right policy decisions are made.

10. Competitiveness is explored by economists through the use of domestic resource cost (DRC) analyses or the very similar policy analysis matrix (PAM) approach, both of which require reliable farm-level data used to construct "typical enterprise budgets," which are then evaluated by comparing a strictly "domestic cost and returns budget" with alternative budgets using international cost, insurance, and freight prices for "tradable inputs." (There is little chance that Haiti could ever export rice, except for perhaps small quantities of locally parboiled rice with its unique taste characteristics.) These DRC or PAM studies usually require years to complete and are often funded by USAID or the World Bank to evaluate the relative competitiveness of different value chains and to assess the impact of various policy reforms. To the authors' knowledge (and confirmed by the USDA), these studies have never been undertaken in Haiti.

Overview of the Haitian rice value chain

Importance of the agricultural sector in the Haitian economy

Haiti has always been a predominantly agricultural country. In its pre-independence days through the 1700s it was the agricultural “powerhouse” of the Caribbean, exemplified by European-owned plantations, a heavy reliance on slave labor imported from Africa, and the triangular trade in slaves, rum, and manufactured goods with Europe and the northern American British colonies.

National food production, processing, and marketing comprise the center of the Haitian economy, employing well over 70 percent of the population.¹¹ Although agricultural production’s contribution to national GDP has slipped to an estimated 23 percent in value terms, it is still high in terms of employment as shown in Table 1. If the food processing and marketing portion of the service sector were added, both value and employment would be a significant percentage of the total economy, despite recent rapid urbanization (approaching 50 percent) and the population’s search for disaster assistance, which is more readily available in urban areas.

Table 1. Agriculture’s role in the Haitian economy

Sector	Total output (US dollars, 2010 estimate)	Share of gross domestic product (% , 2009 estimate)	Share of the workforce employed (% , 1995 estimate)
Agriculture	1.5	23	66
Industry	1.3	20	9
Services	3.7	57	25
Total	6.5	100	100

Source: US Central Intelligence Agency, *The World Factbook*, <https://www.cia.gov/library/publications/the-world-factbook/index.html>.

11. Agriculture employs approximately 66 percent of the workforce; see Feed the Future, *Haiti FY 2011-2015 Multi-Year Strategy* (Washington, DC: USAID, 2011), http://www.feedthefuture.gov/sites/default/files/country/strategies/files/HaitiFeedtheFutureMultiYearStrategy_Public_FINAL.pdf. It is safe to assume that at least another 10 percent of the workforce is involved in processing, marketing, and retailing of food, as well as in food services such as restaurants; the percentage may even be higher.

Importance of rice in agricultural production and food consumption

Given the great importance of rice in consumption in recent years in Haiti, it is of interest to note its relative significance in overall food crop production. Table 2 contains estimates of total production reported by the Food and Agriculture Organization (FAO) of the UN. Normally, these figures are produced by the national crop reporting service in a country, but in Haiti, given recent circumstances, they may have been produced by FAO on its own.

Note that rice ranks seventh (of 14) in the estimated amount of crop agricultural land it occupies, 10th in the aggregate tonnage of crop produced, and 11th of 14 in terms of the farm-gate value of paddy (unhusked) rice produced. If paddy yields had been twice as high as they were, the value of Haitian rice would perhaps have been in third place in terms of value. The diversity and importance of other food crops is a reflection of the fact that Haiti's regional food traditions were largely based on crops other than rice, with rice being considered something of a "luxury" food, often consumed at Sunday dinner (see the section of this report on consumption trends for more details).

Rice's rank in Haiti's crop production also reflects the fact that of the country's total land base (about the size of the US state of Maryland), only 7,716 square kilometers (or 28 percent of the total) are considered arable. Of total arable land, about 18 percent (or 1,430 square kilometers) could theoretically be irrigated with full or partial water control. Of that potential irrigable area, approximately 64 percent, or 92,000 hectares (920 square kilometers), has had the addition of irrigation infrastructure.¹² This amount is a relatively high percentage of the potential irrigable land actually having been equipped for irrigation. Not all of those hectares of irrigated land are still in use; some have been abandoned owing to design issues, silting, excess water, or other problems.

Most of Haiti's rice is grown under full or partial water control conditions in irrigated perimeters of differing sizes and technical efficiency. Under these conditions, the general productivity target used by rice specialists in Asia and Africa is four to five metric tons per hectare. This level of yield or higher is routinely attained when paddy is produced under more optimal conditions of better water control, good seed, and sufficient nitrogen fertilization (this is also true for the low-external input System of Rice Intensification, or SRI, technical package that Oxfam America advocates). This yield level is reached or exceeded in Haiti at the research station in the Artibonite Valley (where careful measurements have been taken) using rice varieties in common use in Haiti.

12. Source: UN Food and Agriculture Organization (FAO), Aqua stat online database, <http://www.fao.org/nr/water/aquastat/main/index.stm>.

Table 2. Estimates of total production, value of production, and harvested area for the 14 top crops, Haiti 2008 (ordered by total production)

Crop	Total production (metric tons and rank)		Value of production (\$ millions and rank)		Area harvested (thousands of hectares and rank)	
Sugar cane	1,100	1	15.9	13	19	13
Cassava	435	2	28.1	8	99	4
Bananas	295	3	42.0	3	45	8
Mangoes, mangosteens, and guavas	295	4	71.8	1	39	10
Yams	235	5	47.4	2	43	9
Sweet potatoes	230	6	23.1	10	77	5
Maize	210	7	21.1	12	269	1
Plantains	200	8	39.9	4	31	11
Fresh vegetables	180	9	33.8	6	30	12
Paddy rice	110	10	22.4	11	53	7
Sorghum	100	11	6.7	14	115	2
Dry beans	65	12	26.6	9	100	3
Avocados	58	13	37.3	5	9	14
Green coffee	35	14	28.6	7	68	6

Source: FAO, FAOSTAT online database, <http://faostat.fao.org/?lang=en>.

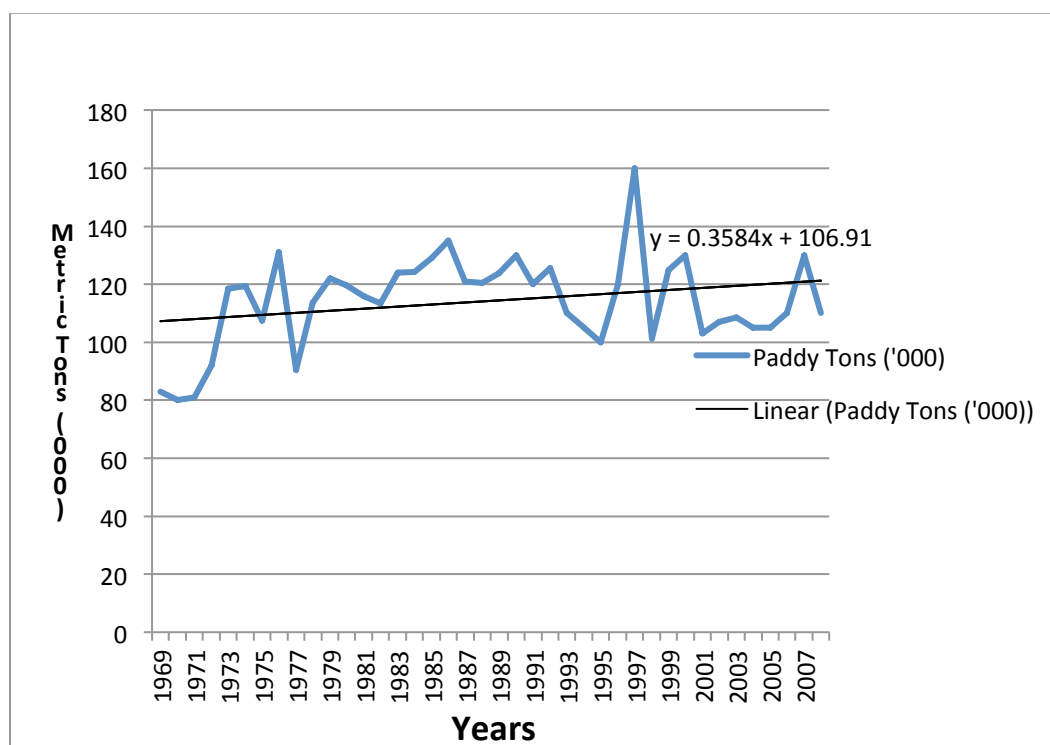
The total quantity of Haitian rice produced over the past 40 years has not increased substantially, as is seen in Figure 1. Over almost 40 years, from 1969 through 2008, estimated aggregate production has trended up a tiny bit (by an average rate of 0.3 percent per year), which is probably not statistically significant because of poor data quality. Assumed average yields¹³ have not changed over the past 10 years, staying close to 2.0 metric tons/hectare. Haiti also has a tradition of growing “upland” or “mountain” rice (irrigated only by rainfall) with a total acreage of approximately 3,000 hectares, but declining rapidly.¹⁴ The new NERICA rice from Africa Rice in West Africa might be of interest because this rice was designed to do well in upland systems with limited inputs.¹⁵

13. MARNDR data, as reported on FAO's statistical database, FAOSTAT.

14. USAID, Haiti Market Analysis, p. 61.

15. New Rice for Africa (NERICA) is the first cross between Asian (*Oryza sativa*) and African (*Oryza glaberrima*) rice.

Figure 1. Production of paddy rice in Haiti, 1969–2008



Source: FAO, FAOSTAT.

Geography of Haitian rice

Haiti is made up of 10 departments, as shown in the map in Figure 2. Rice is likely grown in all departments, but most production (perhaps 80 percent) is concentrated in the Artibonite Valley (in the southern part of the department), with the rest coming from various mid-sized plains in the South department (department 10) and the North-East department (department 6), and significant, but smaller perimeters of different shapes and water supply situations in all the remaining departments, except perhaps the South-East. Many specialists consider the following to be the three most important areas:

- **Artibonite** has 35,000 hectares theoretically in the system, but maximum rainy season production does not exceed 28,000–32,000 hectares owing to flooding and incomplete irrigation infrastructure. (See the following section of this report, “Production Summary and Potential,” for additional information.) Within the Artibonite system are a number of smaller irrigation systems (taking water from tributaries of the Artibonite River), which may amount to approximately 2,000 additional hectares. These systems by commune:

- Petite Rivière: La Verdure
 - Verrettes: Rivière Bois
 - Désarmes: Rivière Morue
 - Saint Marc: Maleuche
 - Dessalines: Cabeille
- The **Maribahoux Plain** in the North-East department has perhaps 10,000 hectares “improved” (with some additional irrigation infrastructure); a new International Fund for Agricultural Development (IFAD) project there will substantially expand areas with water control.¹⁶ This area is almost like an annex to Dominican Republic (DR) rice production with, in some years, most of the capital, inputs, and land preparation services coming from the DR, and most production returning there. In the past year this border has been closed to Haitian rice exports, greatly affecting the production, credit, and marketing situations. The Maribahoux Plain is where Oxfam Great Britain will be supporting the French Collective for Combating Social Exclusion (Collectif de Lutte contre l’Exclusion Sociale, or CLES) group in applying a “social enterprise” version of the Intermón Oxfam association model.
 - **The Torbeck Perimeter** near Les Cayes in the South department. This perimeter has only 2,000-3,000 hectares but the irrigation infrastructure is apparently in good shape and gives farmers access to both irrigation water and correct drainage. The Taiwan Technical Mission (TTM) is providing substantial agronomic and other technical and material assistance to this area (some by Caritas too). Also in this area is Plaine des Cayes and Saint-Louis du Sud.

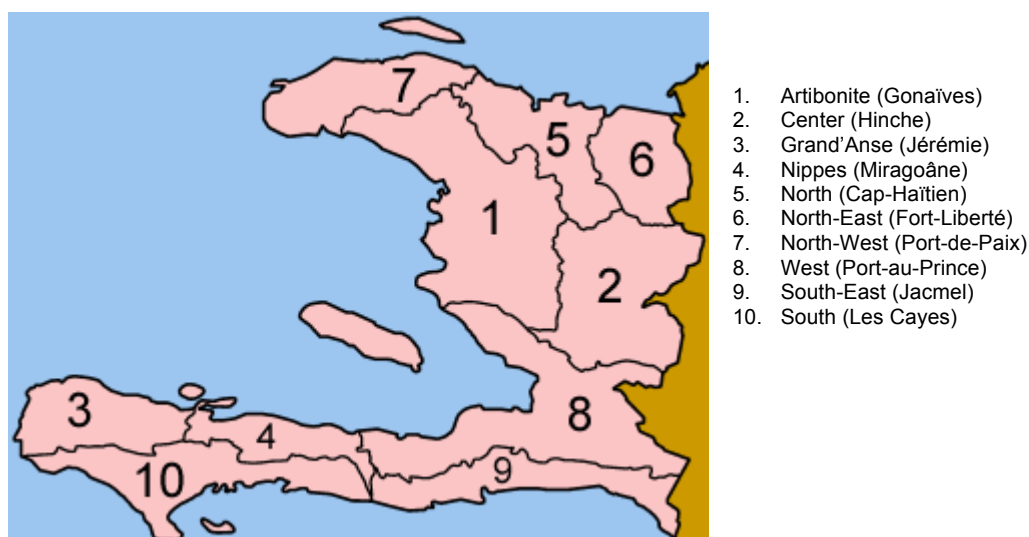
Other smaller perimeters (with technical assistance from selected NGOs in parentheses) that are mentioned by Bayard include:

- **North department:** St-Raphael (German Agro-Action), Grison-Garde (German Agro-Action), Limbé, and the Plaine du Nord with a total of perhaps 4,000 hectares in smaller perimeters.
- **The north slope of the “southern peninsula”:** including parts of the West and Nippes departments, including Petit-Goâve, O’Rouck, Petite Rivière de Nippes, Petit Trou, and the Plain of Abraham (GRAMIR, Caritas), with a total of approximately 3,500 hectares irrigated.

16. See International Fund for Agricultural Development (IFAD), “Proposed Loan to the Republic of Haiti for the Small-Scale Irrigation Development Project (PPI-2)” (Rome: IFAD, 2006); see also IFAD, “Proposed Supplementary Grant to the Republic of Haiti for the Small-Scale Irrigation Development Project (PPI-2)” (Rome: IFAD, 2009).

- **The North-West department:** in the areas of Saint-Louis du Nord and Anse-a-Foleur, approximately 1,000 hectares.¹⁷

Figure 2. Haiti's 10 departments and their capitals



Source: Wikipedia

Production summary and potential

Overall, a maximum of 54,000 hectares may be capable of producing paddy rice with some water control (out of an estimated 92,000 hectares theoretically developed) in the rainy season and less in the drier seasons (perhaps 30,000–35,000 hectares). Table 3 lays out the current situation in terms of rice production and consumption and an optimistic future scenario (2020) where the number of hectares effectively under irrigation (through system extensions and rehabilitations) increases to 77,000 hectares, average yields are substantially improved (e.g., from 1.75 metric tons/hectare to 3.5 metric tons/hectare in the rainy season), and milling efficiency and loss reduction cause the “paddy-rice transformation in rate” to rise from 55 percent to 65 percent nationwide (mostly a result of increased use of improved roller mills).

Table 3. Current situation in rice self-sufficiency vs. optimistic 2020 scenario

17. Bayard, “La filière riz.”

Scenario	Irrigated HAs	Assumed yield (MT/HA)	Production (MT)	Rice equivalent (MT)*	Assumed consumption (MT)	National production (% of consumption)
Current rainy	54,000	1.75	94,500	51,975		
Current dry	35,000	1.50	52,500	28,875		
Total			147,000	80,850	450,000	18
2020 rainy	77,000	3.50	269,500	175,175		
2020 dry	50,000	3.00	150,000	97,500		
Total			419,500	272,675	500,000	55

Source: Authors' modeling.

* Assumed milling rate plus losses: 55 percent for current condition; 65 percent for 2020 model.

Under these assumptions (indeed optimistic, but achievable by even partial application of international standards), domestic production could reach approximately 55 percent of national consumption. This growth is partially because consumption is only assumed to have increased by about 1 percent a year, a rate far lower than its rise in recent years. This could be the result of efforts made to increase the consumption of traditional alternative crops, especially roots and tubers.

At a price of \$600 per ton, the projected reduction in imports of about 142,000 metric tons would represent an annual savings of \$85 million in foreign exchange and a similar increase in national economic activity and employment. This savings would indeed be a remarkable accomplishment, possible if the GOH made some adjustments in its trade and investment policies and if donor-funded projects could be better coordinated to focus on achieving clear and coherent national rural development objectives. Pursuing such a transition would require making locally produced rice a true national priority, and it would take 10–15 years to accomplish under the best of circumstances.

Heartland of Haiti rice: The Artibonite

The Artibonite Valley is Haiti's "rice bowl" thanks to the construction of the Péligre hydroelectric dam on the Artibonite River in Center department. The Péligre Dam is a main source of electricity for Port-au-Prince and is operated by EDH (Electricité de Haiti). The dam was built around 1950, and an elaborate

complementary irrigation infrastructure was built soon after, beginning approximately 60 kilometers downstream in the valley. The river flows in a northwesterly direction in the Artibonite department, eventually emptying into the Gulf of Gonâve. This irrigation system produces perhaps 75–80 percent of Haiti’s total paddy rice production, and its infrastructure is operated by the Organisation pour le Développement de la Vallée de l’Artibonite (ODVA, the Organization for the Development of the Artibonite Valley), the Ministry of Agriculture’s largest special operating body. The turnaround of Haitian rice production, if it is to happen, must include the Artibonite.

For the past 30 years major investments in the Artibonite system have been made under funding provided by the Inter-American Development Bank (IADB). The third, phase of this funding, the PIA (Agricultural Intensification Program), will end in 2011. In discussions with IADB personnel in Port-au-Prince, we learned that the IADB will prepare a fourth phase of major funding that will continue infrastructure construction in key areas, as well as work toward improving the functioning of ODVA and determine other operational objectives during the design process.

Hydrology and irrigation infrastructure: Multiple uses, multiple problems

The Artibonite irrigation system involves a number of major pieces of infrastructure, which take much of the flow of the Artibonite River and channel it onto valley flood plains. This system includes the following infrastructure:

- A “diversion dam,” roughly 20 kilometers upriver from Petite Rivière de l’Artibonite, which channels approximately 77 percent of the 52 M³/sec of the river’s diverted flow into the a left-bank main canal, and 23 percent into the smaller right-bank main canal.
- A small hydroelectric generating plant (for Saint Marc and Gonaïves and agricultural use) part way down the left-bank main canal. This plant was financed by German aid in the 1970s, but only one of the facility’s five turbines is functioning, an obvious target for an extremely cost-effective potential supplemental investment. This would require a management accommodation with EDH. Part of the increased electricity produced could be used for cooling and processing high-value dry-season fruit and vegetable production for export.
- Secondary and tertiary canals. On both banks, once the land flattens out, the main canals send water into secondary canals. From these, turnouts are supposed to direct water into tertiary canals, which are supposed to put water into farmers’ parcels. However, in many parts of the system, these third-level canals were never built. Also not built were field drains to allow

water to be drained from farm parcels. In addition, many of the “higher-level” drains have not been regularly dredged. The river itself, being substantially lower than the paddy lands, serves as the overall drain for the system.

- All irrigation is by gravity (versus some systems in the world that require expensive water pumping), which greatly reduces system and farmer costs.
- An experimental farm in the valley, seed multiplication fields, and a seed cleaning and bagging facility run by ODVA at Déseaux, an area where land reform has provided 0.5 hectares to a group of families.
- Canal-side roads. Canal-side roads are inadequate or nonexistent for minimal input supply and paddy marketing.
- The biggest macrolevel water management problem is a lack of serious water management coordination between ODVA and EDH at the Péligre Dam. EDH regulates flow through the dam to optimize hydroelectric power production and to safeguard the dam from damage from floods. This regulation often results in too much or too little water available for irrigation. During flood periods, the gates are sometimes opened wide to ostensibly protect the dam, but the consequence, when the river overflows its banks, has been massive destruction of expensive irrigation works and farmers’ crops. IADB phase 3 funding included an agreement on water management between ODVA and EDH, which has never been respected by EDH. PIA undertook construction of bank reinforcement and “overflow” channels/drains to reduce risk to the irrigation system, but the lack of coordination remains an unresolved problem.

ODVA in need of restructuring

As a consequence of budgetary problems, changes in accepted worldwide “best practices” in irrigated system management and technical assistance, and the overuse of its personnel and resources for other, often political purposes, ODVA has become a dysfunctional dinosaur. Lack of effective systematic water management and infrastructure maintenance, the collapse of the farmer water-user fee collection system, the virtual lack of any technology extension in rice or diversification crops, sub-par performance on improved seed production and distribution, and a squandering of available financial resources are all symptoms of problems that call out for correction.

IADB-PIA has recognized these problems for years, and funds were used in the current third phase of funding to do a diagnosis of ODVA shortcomings and develop a restructuring plan. This plan was completed, but has not been

implemented. Its implementation is a condition for fourth-phase IADB funding of the Artibonite.

Farmer associations and the RACPABA model

Most small, medium, and large irrigated rice production zones in Haiti have farmer associations and/or cooperatives in place with a variety of different sponsorships, objectives, and levels of success. Bayard provides information and analysis on 62 such organizations. In his inventory he lists three types of groups:

- Support and advocacy groups: 20 in number
- Water user groups: 23 (also involved in irrigation system maintenance)
- Input supply, milling, and rice marketing groups: 19

His general conclusions include the following points:

- The advocacy groups largely limit themselves to working on political problems affecting farmers in their local area (12 of the 20 groups of this kind are in the Artibonite; a good number are “in hibernation”).
- Water-user groups have increased in number after a change in national agricultural policy encouraging “social or community” management of water and infrastructure maintenance. In the Artibonite few farmers pay the water-user fee, and ODVA is not upholding its obligation to water-user groups to reimburse them for secondary canal cleaning/dredging (*curage*, in French).
- Input supply groups have focused on the provision of seeds and especially fertilizer to their members, with activity increasing and decreasing according to variable national fertilizer policy.
- RACPABA receives very favorable mention from Magloire and other outside evaluators as a multipurpose association federation (or network), having member associations and cooperatives spread across the valley, but only directly serving about 3 percent of farm families in the area (information from Intermón Oxfam).
- Substantial organizational weaknesses are found in all of these organizations. In a “chicken-and-egg” situation they could do more if they had a broader membership base with more financial and training staff resources.
- Confusion about organizational objectives, coupled with limited membership and financial resources, has restricted limited leverage of these organizations, even in the valley.

- There is a striking need/opportunity for increasing leverage and effectiveness in advocacy and resource mobilization by promoting greater inter-organization cooperation, information exchange, and value chain coordination.¹⁸

Of substantial interest to Oxfam America is the RACPABA model built and supported over the past 10 years by its “sister Oxfam” from Spain, Intermón Oxfam. A valuable overview evaluation of this work was completed recently.¹⁹

One of the important objectives of the RACPABA network was to gain economies of scale in input supply (production of improved rice seed and acquisition of fertilizer), land preparation, tractor hire services, the operation of standardized post-harvest rice milling, and a branded marketing operation.

Land tenure complications

Land tenure in the Artibonite Valley is complex. In general there is apparently no longer a major problem of large landowners or *grandons* in the valley areas served by irrigation water. The average holding is probably less than 1 hectare – or 2.5 acres – but a substantial amount of valley land is owned by people who live on the fringes of the valley (Saint Marc and Gonaïves) or in distant cities (for example, Port-au-Prince) who rent the land to valley residents for crop production. Rents are apparently quite high (\$150/hectare was reported from surveys conducted in 2006), which only reduces the profitability of rice farming for those producers. Even this level of land rent is manageable (without any government subsidy) if investments in better water control can allow higher yields, coupled with loss reduction in marketing channels created through economies in grouped processing, storage, and transport. The infrastructural investments needed (especially for better drainage) would, however, require larger-scale subsidization in the Artibonite Valley, as they do in virtually every irrigated system around the world. These investments are of a scale that they are likely only feasible by governments or donors, because the land tenure system would not easily allow private investors to recover their funds invested in this type of infrastructural improvement.

In the Artibonite approximately 55 percent of rice parcels are farmed by their owners. The percentage of ownership in small and medium perimeters in other parts of the country vary from a low of 20 percent (in Torbeck and the Cayes Plain in the south) to an estimated 60 percent in the Maribahoux Plain of the North-East department. For nonowners, there are at least five ways of renting the land or engaging in “share cropping.” Bayard mentions five systems in use in

18. Bayard, “La filière riz,” pp. 68–77.

19. Magloire, “Rapport Final.”

different locations: *fermage*, *métayage*, *gérance*, *plane*, and *potek*, which would require a level of anthropological investigation to sort out and fully understand.²⁰

As a consequence of the value of land in the Artibonite and of extensive “land grabbing” when the system was being developed in the 1950s and 1960s, land-related violence has a long history in the area. Bethel describes efforts over the past 20 years to bring peace and order to rice land ownership in the valley. Provisions of the 1987 constitution led to the creation of the Institution Nationale de Réforme Agraire (INARA, the National Agrarian Reform Institution) in 1995. It has redistributed state land and some land owned by absentee landowners to small farmers at the rate of 0.5 hectares per family. Several thousand farmers have received these parcels but generally have not received legal title to the land because the lack of a functioning cadaster system and related political complications have delayed the process. INARA also has some power to address land disputes brought to it by opposing parties; this ability is fortunate given that up to half the irrigated land in the valley is apparently subject to tenure dispute.²¹

Rice productivity problems

Raising average farmer yields (e.g., from the current 2 metric tons/hectare to 5 metric tons/hectare or higher) is the quickest way to reduce the poverty of valley farm families. Such yield increases have been routinely demonstrated in the valley by the TTM and other applied researchers. The objective of raising farmer yields of paddy (and resulting farm family income) in the Artibonite is confronted with a variety of complex problems having agronomic, land tenure, farmer organization, and access-to-capital dimensions. Among the most important problems affecting valley rice farmers are the following:

- **Excess water/poor drainage:** Much of the valley suffers from excess water and poor drainage as a result of missing third-level canals, inadequate drains, and lack of timely dredging. Most rice varieties produce higher yields if farmers can provide alternating periods of flooded and well-drained soil.
- **Varietal choice versus consumer/market preferences:** Preferred varieties on the local market (Sheila, Shelda, etc.) have the lowest yields, and then must undergo expensive parboiling to achieve the desired “yellow rice” characteristics that high-end consumers demand.

20. Bayard, “La filière riz,” p. 37.

21. Amber Bethell, “Land Tenure and Reform in Haiti” (unpublished paper, University of Maine, 2002), <http://aboutweston.com/Haitilandtenure.pdf>.

- **Small farm sizes and fragmented holdings:** Small farm sizes and fragmented holdings impede farmers from making the most economical use of land preparation by smaller-scale mechanization.
- **Severely undercapitalized farmers with little or no access to credit:** Lack of capital and credit hamper farmers (from a cash-flow point of view) from making optimal use of improved seeds and correct doses of inorganic fertilizers (urea and 20-20-10). Simple soil testing is also missing.
- **Weak and fragmented farmer organizations:** As mentioned earlier in this report, even in the best-organized areas of the Artibonite, farmer organizations are weak, and their collective “voice” does not carry as much weight as it should vis-à-vis government policy and access to assistance resources and services.
- **Production and investment risk:** The sum total of these factors (plus inadequate EDH/ODVA water management leading to unnecessary flooding, and periodic hurricane damage) means that returns to farmer and nonfarmer investment remain risky with no risk-pooling or risk-reduction mechanisms available.

Different “system partners” have the responsibility to address these and other challenges facing rice production in the valley. Some of these issues are government responsibilities; others are best tackled addressed by farmer organizations or the private sector. NGOs can play an important role in assisting farm groups to address many of these problems directly. Other problem areas can be addressed through better organization and advocacy so that farmer groups can make their needs effectively known to regional and national authorities and their donor partners. These approaches will be addressed in a later section of this paper.

Consumption trends and consumer preferences

Additional data on food consumption in Haiti can be found in the latest (2005) donor-funded Budget and Consumption Survey (EBCM, Enquête Budget Consommation des Ménages) or the latest Living Conditions Measurement Study (ECVH, Enquête sur les Conditions de Vie en Haïti), which we did not have time to consult. However the relative importance of rice in Haitian diets (at all income levels) is well known and reflected in FAO data on aggregate food consumption, and the role of imports by food category, as seen in Table 4.

Of all crop food categories in 2007, milled rice was ranked number one in terms of total tonnage consumed by the population. Of the top 25 food commodities consumed, 16 were produced primarily in Haiti (not more than 6 percent imported), three in their majority (75 percent or more Haitian production), leaving only six food commodities that are totally or mostly imported: wheat, palm oil, soybean oil, refined sugar (ironic for a onetime major sugar-producing country), tomatoes, and milled rice (81 percent).

Most Haitians interviewed on the subject of national food consumption stressed the relatively recent growth of rice to its current dominant position. Previous dominant regional patterns of food consumption, which were more reliant on maize, sorghum, and a wide variety of root, tuber, and leguminous crops (cassava, yams, sweet potatoes, other roots and tubers, beans, cowpeas, lentils, peanuts), complemented with a wide variety of vegetables and fruit, have been replaced by the current heavy dependence on imported rice. Rice was once a luxury – a “Sunday meal” food for most households.

According to the US Department of Agriculture (USDA), a number of factors led to increased rice consumption in the 1980s and 1990s:

Along with corn, beans, tubers, and plantains, rice has an increasing share in the basic domestic diet due to the relatively low cost. Haitians used to consume rice once-a-week in the 1980s. The higher food demand induced by the fast population growth and lower import tariffs implemented in the late 1980s to address this need made rice imports one of the least expensive carbohydrate sources. As a result, rice has become a basic item for daily use today. The low prices of imported rice have helped change consumption patterns of some consumers, enticing them to insert rice as a less expensive alternative source of carbohydrate. Blending imported rice with other starchy foods such as bread and imported pasta, and other staple foods like, plantains, sweet potato, cassava and dasheen has become part of the Haitian diet.²²

Part of the inability of other crops to maintain their position in Haitian diets reflects the longer times required for their preparation and a lack of competitive “fast foods” made from local crops. The lack of food technology adaptation research in Haiti partially accounts for this. For example, transformation of cassava into *gari* or *acheké*, extremely common in coastal West Africa, would allow farmers to begin to use improved cassava varieties that easily produce 20 tons/hectare or more of harvested roots on very poor, exhausted soils.²³

22. USDA, *GAIN Report*, p. 4.

23. *Gari* is a dried couscous-like product made from grated cassava in Ghana and Nigeria. Because it is dry it can be bagged and sold like bagged rice or wheat couscous. *Acheké* is a similar product sold in a damp form in the Ivory Coast. Both are

Although changes in food habits often take a long time to come about, making greater use of available low-cost foods “made in Haiti” would greatly improve the national balance of payments and food security by giving poorer consumers a greater choice among lower-cost food items.

Many Haitian consumers with higher incomes and purchasing power prefer good- quality local rice, especially parboiled “yellow rice” (made with varieties descended from the imported “Dawn” variety: Madame Grosgouse, Sheila, Shelda, etc.). The much larger group of poorer consumers are obliged to buy less desirable, but clean and cheap “Miami rice” (called *diri Miami* in Creole, marketed as Mega, Tchako, Lucky, etc.), because of the limited availability of competitive local rice, such as TCS10. The authors did not have adequate information to calculate the market shares of different income groups. Regardless, a national rice promotion strategy should target both of these market segments.

quicker to prepare for the consumer than milled rice, and both are widely popular. Senegalese eat a similar product made from millet, alternating with this with rice in their meals.

Table 4. Aggregate amounts of the top 25 food commodities consumed, Haiti, 2007

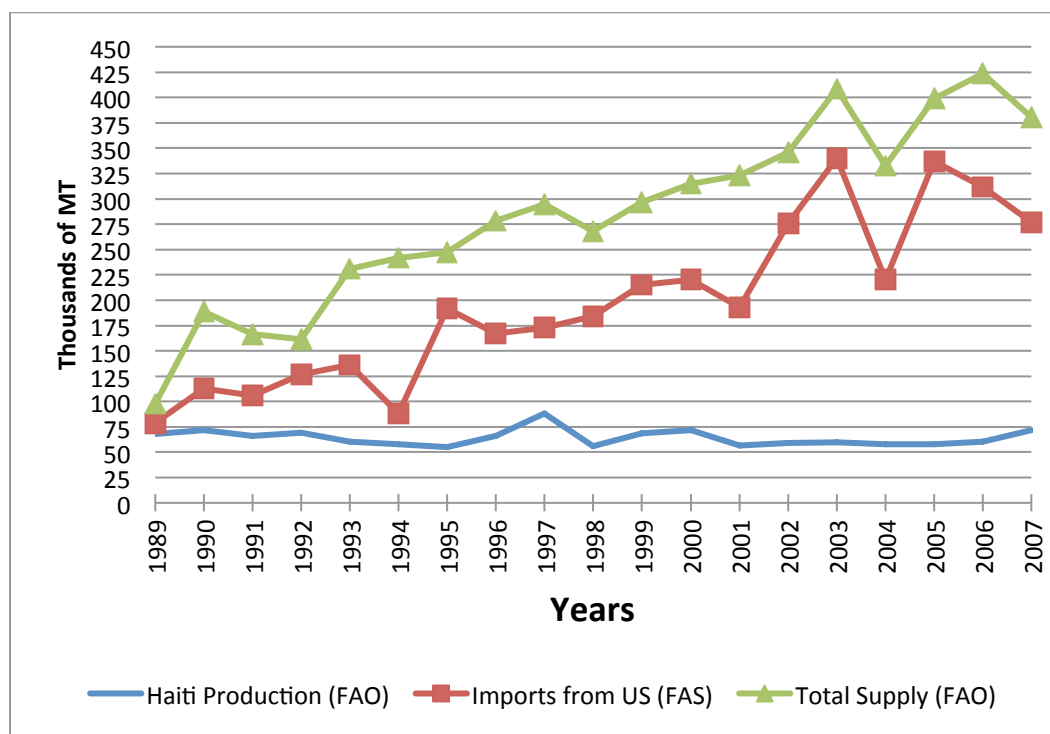
Commodity	Quantity consumed (thousand MT)	Imports (thousand MT)	Imports as % of consumption
Milled rice	381	309	81
Mangoes	325	6	2
Cassava	315	0	0
Wheat	262	253	96
Corn	209	12	6
Other vegetables	193	10	5
Roots and tubers (dry equivalent)	193	34	18
Yams	184	0	0
Sugar (refined equivalent)	179	208	100
Sweet potatoes	176	0	0
Plantains	150	0	0
Sorghum	50	0	0
Oranges, mandarins	48	0	0
Coffee	44	0	0
Soybean oil	44	44	100
Tomatoes	42	39	93
Pulses	33	4	12
Coconuts	33	0	0
Other roots	32	0	0
Shelled peanuts	17	0.04	0.2
Potatoes	12	0.02	2
Grapefruit	12	0	0
Onions	12	3	25
Other oil crops	5	0.3	6
Palm oil	4	54	100

Source: FAOSTAT Haiti Commodity Balance Sheets.

The current market situation

Figure 3 illustrates the huge surge in the import of subsidized US rice into Haiti after “trade liberalization” beginning in 1986 and the drastic reduction of Haiti’s border protection, changing rice from an occasional component of average diets (one or two meals a week) to the mainstay (seven to 14 meals a week). Rice has also been imported from other countries, but the bulk of imports have come from the United States.

Figure 3. Milled rice: Haitian production, imports from the United States, and total supply, 1989–2007



Sources: FAOSTAT and USDA Foreign Agriculture Service (FAS) online databases.

Food aid rice imports

One of the great concerns about the health of the Haitian rice value chain has been the impact of large amounts of food aid rice that has been provided to Haiti over the past five years, especially in the post-earthquake period in 2010. Table 5 contains information extracted from AGEMAR (a shipping association) records. While not conclusive (the destination of one-third of the imports is “not known”), the large quantities of food aid rice seemed to have peaked two to three months after the earthquake, and available price information seems to indicate that market prices did not collapse with this spike in food aid imports. The structure of Haitian urban and rural rice markets is shown in Figure 4. A year after the earthquake, some of the disruption reported in the imported rice marketing channel in Figure 4 seems to have been repaired, but with perhaps a slight reduction in the number of importers and especially smaller wholesalers, a consequence of the destruction of some commercial storage facilities and/or decapitalization of smaller private companies. The authors of the emergency market diagnosis from which the figure is taken did not have the time to investigate this portion of the value chain, but their study was the result of a

wide pooling of local and imported knowledge of the marketing system, and thus is likely to be largely correct.

Structure of rice marketing channels

The description of the structure of rice importing in Figure 4 seems to be supported by additional information on importers collected by the US Agency for International Development (USAID),²⁴ presented in Table 6. An emergency market mapping and analysis carried out immediately after the earthquake describes six large commercial importers in Port-au-Prince only,²⁵ while the information in Table 6 covers all national ports.

Table 5. Commercial vs. food aid rice imports, Haiti, January–June 2010 (thousands of MT)

Month	Commercial	Unknown	Food aid	Total
January	204	0	0	204
February	636	6,625	5,998	13,259
March	10,934	14,306	18,253	43,493
April	267	15,063	5,229	20,559
May	14,625	0	1,831	16,456
June	2,799	0	200	2,999

Source: AGEMAR data, reported in USAID, *Haiti Market Analysis*.

In addition, a fairly large volume of food trade appears to occur at the border with the Dominican Republic via the two weekly “open-market” days at the Mal Passe (West department) and the Ouanaminthe (North-East department) border markets. Because the DR has an import tariff of 20 percent (versus 3 percent in Haiti),²⁶ the incentive may largely favor rice exports rather than imports. One of the key questions about imported rice marketing is bulk importing and bagging in port facilities or importing rice bagged in the US. Much of the small-to-medium importing of rice (especially to smaller ports) from the US is prebagged in the US, palletized, and imported in 40-foot cargo containers. These bagging

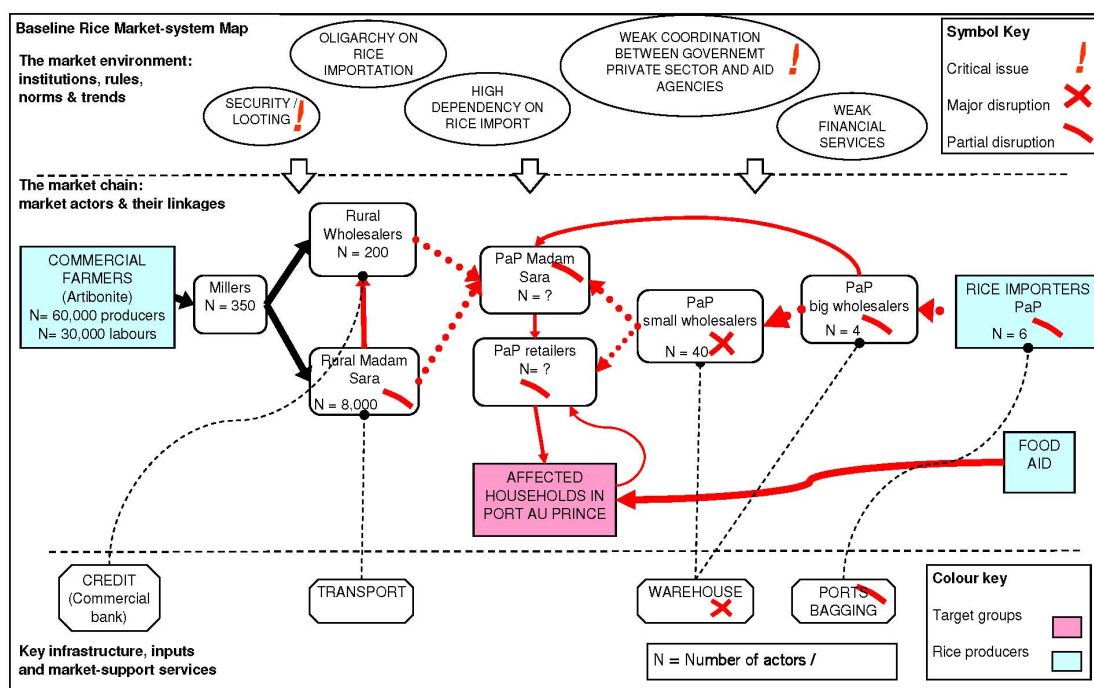
24. USAID, *Haiti Market Analysis*.

25. International Rescue Committee (IRC) et al., “The Market System for Rice,” *Multi-Agency Emergency Market Mapping and Analysis (EMMA) Report* (Port-au-Prince: IRC et al., 2010).

26. The Fintrac Bellmon team did point out that with additional taxes and fees; the total official tax burden on imported rice to Haiti is theoretically 18.5 percent. The degree to which all these taxes are actually collected, or the extent of “under invoicing” and other common trade schemes in the import channel, is not known. See USAID, *Haiti Market Analysis*.

and handling charges, and where and how they are accomplished, will have a substantial impact on the wholesale price of bagged rice. These activities in the imported rice value chain need to be investigated in more detail in future market structure and pricing studies.

Figure 4. Urban and rural rice marketing channels, February 2010



Source: International Rescue Committee (IRC) et al., "The Market System for Rice in Haiti," *Multi-Agency Emergency Market Mapping and Analysis (EMMA) Report* (Port-au-Prince: IRC et al., 2010).

Furthermore, rice import data reveal some importation of 100 percent broken rice from neighboring countries in the Caribbean region. These rice milling byproducts imported from the Dominican Republic's industrial rice mills go by the name of *cabecit*.²⁷ However, the reported volume of cross-border rice trade between Haiti and the Dominican Republic is minimal.²⁸

Market prices for rice in Port-au-Prince

Prices can be measured by tons, sacks (110 lb or 50 kg), or the most common retail measure in Haiti, the marmite (a metal can, with an average weight of 2.5 kg, or 5.5 to 6.0 lb in retail rice practice). The CNSA price data collection effort (supported by USAID Famine Early Warning Systems Network [FEWSNet], the World Food Programme's Vulnerability Assessment and Mapping unit, FAO,

27. GOH/MARNDR, Haiti: Politique de Développement Agricole.

28. USDA, GAIN Report.

Oxfam, MARNDR, and other organizations) collects market prices for 23 products and two currencies in 10 important marketplaces across the country. Table 7 is an example of this weekly basic food database system, which is certainly the best publicly available data for food price monitoring. Consistent data reporting for four main rice types has only been undertaken since March 22, 2010. The four rice types follow:

- Imported rice from the US, Tchako brand
- Local Sheila parboiled yellow rice
- Local production of the high-yielding Taiwanese variety TCS10 (main production of the Artibonite Valley)
- Imported *riz sinistré* (food aid rice: sometimes distributed free then resold, sometimes “monetized” [sold] by the food aid agency)

Table 6. Identification of commercial and food aid rice importers, January–June 2010 (% market share)

Commercial importer	Market share	Food aid importer	Market share
Unknown	55	WFP	95
Caribbean Grain Company	10	Food for the Poor	4
National Bag and Trading Company	10	Jamaican Defense Force	0.5
Riceco	9	MINUSTAH ²⁹	0.2
Brunvil Leptune Export/Import	7	Others	0.3
Haiti Commerce	4		

Source: AGEMAR data, reported in USAID, Haiti Market Analysis, p. 72.

29. UN MINUSTAH is the UN stabilization force in Haiti.

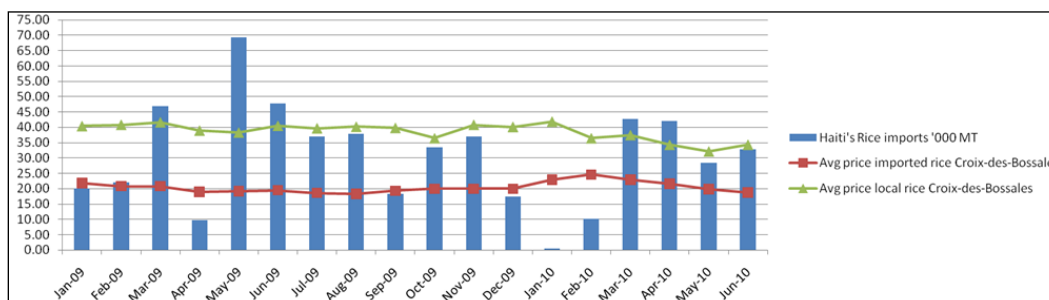
In Table 7 the imported rice is shown as being more expensive than the TCS10 (25 vs. 20 Haitian gourdes/lb, or 150 vs. 120 gourdes/marmite). This higher price has been often the case in the three to four months prior to this report and may reflect popular fear of the TCS10 rice coming from the center of the cholera outbreak (the Artibonite).

The USAID authors of Figure 5 used these data to compare imported with local rice prices over an 18-month period, but seems to be comparing imported rice with the more expensive parboiled Sheila local rice.

Table 7. CNSA data collection sheet for market prices # 135, Jan. 31, 2011

Produits	Unité de mesure	Prix moyen en gourdes									
		Cx des Bossales	Cap-Haïtien	Cayes	Jérémie	Gonaïves	Jacmel	Hinche	Port de Paix	Ouanaminthe	F. des Nègres
Riz Importé Tchako	1 livre	25.00	22.00	25.00	26.00	25.00	30.00	25.67		25.00	
Riz Sheila	1 livre	37.50	38.33	41.67	65.00	41.67	50.00	52.50			50.00
Riz TCS-10	1 livre	20.00	18.33	20.83		20.00				20.83	
Riz sinistré	1 livre	20.83	22.00	22.50	21.67	25.00	25.00	20.00	25.00	25.00	20.00
Pois Rouge	1 livre	41.67	21.67	37.50	40.00	50.00	50.00	29.17	30.00	35.00	29.17
Pois Noir	1 livre	26.67	25.33	29.17	26.67	30.00	25.83	23.33	30.00	29.17	25.00
Pois sinistré	1 livre	28.33	20.83	29.17	33.33	33.33	35.00	21.67	30.00	29.17	25.00
Mais moulin importé	1 livre	16.67	22.50	16.67	20.00	20.00	20.00	18.33	20.00	23.33	16.67
Mais moulin local	1 livre	10.00	20.83	11.67	10.67	9.17	12.00	11.67	10.00	8.33	10.00
Petit Mil (Sorgho)	1 livre	11.67	20.83	16.67	17.33	9.17	15.00	10.00	12.50	17.50	10.00
Farine blé	1 livre	11.67	10.83	13.33	16.67	16.67	20.00	11.67	15.00	17.50	11.67
Blé (grain)	1 livre	12.50	21.67	8.33	13.33	16.67	12.50	6.67	16.67	23.33	5.83
Sel de cuisine	1 livre	5.83	5.33	6.67	5.00	5.83	8.33	5.83	4.17	5.83	5.83
Sucre blanc	1 livre	29.17	30.33	33.33	40.00	33.33	31.67	33.33	30.00	35.00	29.17
Sucre crème	1 livre	29.17	25.83	31.67	33.33	29.17	30.00	29.17	30.00	29.17	25.00
Lait Bongu	Boîte 170g	18.00	22.00	20.00	20.00	17.00	17.00	17.00	20.00	20.00	17.00
Huile Alberto	litre	79.37	89.95	85.98	79.37	79.37	79.37	79.37	79.37	79.37	79.37
Huile Rika	litre	79.37	85.98	72.75	75.40	79.37	79.37	79.37		79.37	
Huile Sinistrée	litre	72.75	67.46	72.75	75.40	79.37	68.78	67.46	79.37	79.37	75.40
Pâte tomate Rika	Boîte 226.8g	25.00	60.00	25.00	33.00	25.00	25.00	20.00	30.00	30.00	25.00
Spaghetti Italia	Sachet 175g	17.50	20.00	20.00	25.00	17.00	20.00	25.00	20.00	20.00	20.00
Spaghetti Importé	Sachet 175g	17.50	25.00	25.00	25.00	17.00	20.00	25.00	20.00	20.00	20.00
Charbon de bois	Gros sac	850.00	795.00	400.00	450.00	500.00	400.00	350.00	300.00	370.00	500.00
Achat du dollar	Marché in formel	40.00	40.50	40.00	39.50	40.00	39.75	40.00	39.00	40.00	40.00
Achat du peso	Marché in formel									37.25	

Figure 5. Haiti rice imports and prices for imported rice and local rice (in Haitian gourdes/lb), January 2009–June 2010



Source: USAID, Haiti Market Analysis.

Figure 6 shows a more nuanced picture by comparing the price of imported commercial US rice with both Sheila and TCS10, as well as food aid rice. Figure 6 shows that the prices of imported US rice and local TCS10 are very close, with TCS10 being a bit more stable. Sometimes TCS10 is marginally more expensive in the Croix des Bossales market, sometimes marginally cheaper. One would also have to compare the volumes sold, but this does indicate that TCS10 can be quite competitive or cheaper than imported rice, even in Port of Prince. Imported food aid rice (*riz sinistre*) is generally a bit cheaper than all other rice, but the tight cluster of the three cheaper ones must be considered close substitutes. It would also be important to do a spatial and temporal analysis of the rice prices and quantities sold in the nine other markets reported by CNSA. From Figure 6 we can conclude that: (a) massive imports of both commercial US rice and food aid rice set the local rice price, and (b) undoubtedly have reduced the price that TCS10 and other locally produced rice would have received on the national market if not facing this massive competition. It is also worth noting that rice importing is a very profitable business in Haiti, under the virtual oligopoly control of a small group of prominent local firms. Rice importers exert considerable influence over tariff policy and food policy more generally.³⁰ Furthermore, the popular Tchako brand of imported rice is marketed by the local affiliate of Riceland Foods, an Arkansas-based cooperative that was the single largest recipient of US government farm payments during 1995–2010.³¹

In sum, because TSC10 sells at price parity with the imported (rebagged) rice coming from the US from different origins, increasing the import tariff incrementally could greatly add to the profitability of the local value chain, encouraging investment to further add to the efficiency of the local production and marketing systems. Consumers are unlikely to notice an annual increase of 3–4 percent in the tariff over a five- or six-year period.

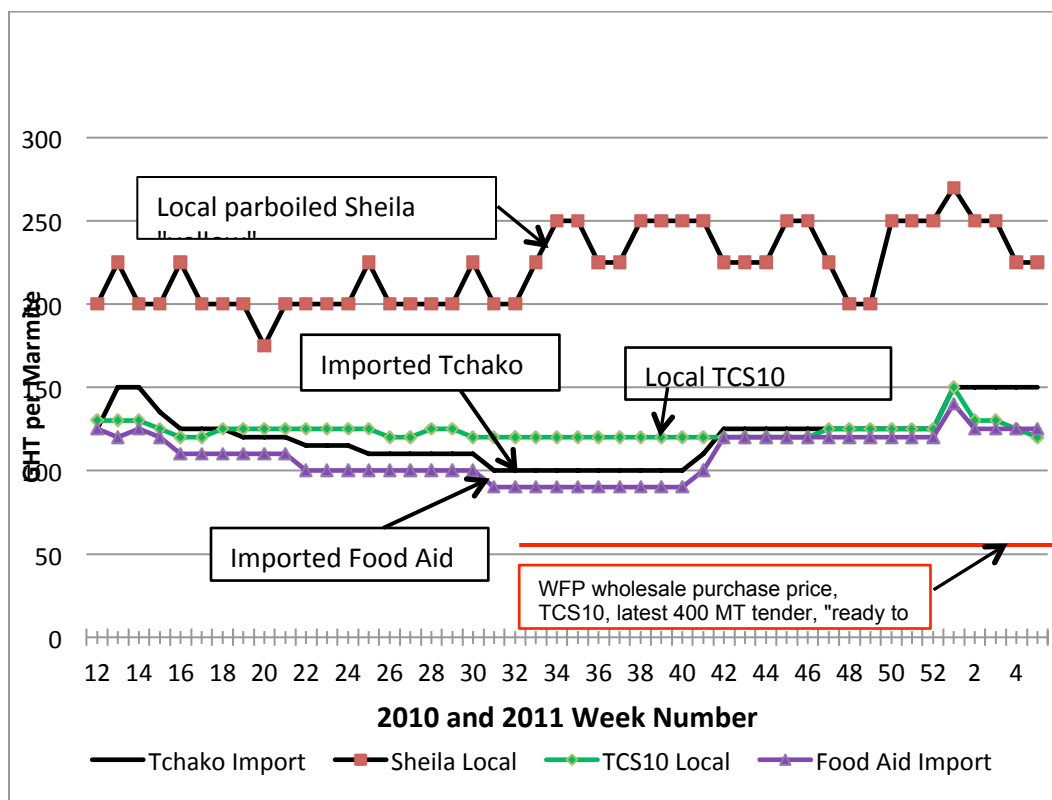
WFP local rice purchases

It is of interest to note that the World Food Programme (WFP) has been buying local rice via open, competitive tender, at very low prices, which cannot be considered to be providing much support to local production, but which is certainly better than providing rice grown in the US as food aid.

30. See USAID, *Haiti Market Analysis*; see also <http://www.lenouvelliste.com/article.php?PubID=1&ArticleID=56464&PubDate=2008-04-23>.

31. See the Environmental Working Group's (EWG's) farm subsidy database, <http://farm.ewg.org/>; see also USDA, *GAIN Report*.

Figure 6. Rice prices, Croix-des-Bossales market, Port-au-Prince, March 22, 2010–Jan. 31, 2011 (Haitian gourdes per 6 lb marmite)



Source: CNSA Price Database and information collected by authors.

Local sellers are mostly local cooperatives and farmer marketing associations, including RACPABA, which contracted to sell 215 MT of the latest 400 MT tender (in 50 kg bags) at a delivered price of 55 gourdes/marmite, less than 50 percent of the recent retail market price in Port-au-Prince (this wholesale local purchase price is shown in Figure 6). These local sellers to WFP have to meet quality standards in terms of grain humidity, percentage of broken grains, and presence of foreign matter (inspected and certified by the Swiss trade control and inspection firm SGS); they must provide the correct fumigation (with Phostoxin) of stored rice as needed; and they must provide transport to WFP-designated storage locations. WFP did provide the 50 kg bags, presumably with its own logo. This WFP practice does not seem to be a particularly good deal for local farmer associations. Clearly, such purchasing by the WFP needs further market channel analysis, but the local groups may have little alternative as a result of lack of marketing capital, lack of storage warehouses, and inexperience.

Local rice prices and paddy production profitability in the Artibonite Valley

To get an idea of the overall structure of prices in the national rice value chain,³² we have to look at local market prices for milled rice, and at prices paid to farmers for their paddy across the production and marketing year.

Anecdotal evidence from Pont Soudé in the Artibonite Valley (supported by five months of ODVA data from Pont Soudé and L'Estère) suggests that the TCS10 milled rice price fluctuates between 80 and 100 gourdes/marmite in local markets. These prices would imply (at a 60 percent conversion rate, and allowing for some charge for local transport, pre-mill drying, bagging charges, and modest profit) of a farm-gate price in the range of perhaps 30–40 gourdes/marmite, or 12–16 gourdes/kg. For a family with only half a hectare of paddy land, with an average production of 1 ton of paddy/season (“low yield”) to 2 tons of paddy/season (“high yield”), this pricing would represent a gross revenue of between 12,500 and 25,000 GHT (or between \$313 and \$625) for one season of production. Two seasons per year might produce therefore between \$625 and \$1,250 gross, from which production expenses must be deducted as in Table 8. The low-expense scenario assumes no hired labor, no land rent, and suboptimal fertilizer levels. The higher-expense scenario includes land rent, use of hired labor, and more correct fertilizer use.

Under optimistic, high-yield/low-expense assumptions, a small family (two to four members) might be able to net \$1,250/year for their rice farming operation (or about \$3.42 a day) by selling the entire paddy production to small-scale women paddy buyers. In addition, the family might be able to earn further income by selling family members’ labor to other farmers, or through other sources of farm and/or non-farm income. More refined examples of typical farm family budgets should be developed in documenting the situation of typical small-farm families. These budgets will also allow the impact of productivity gains and production cost reductions, possible with improved agronomic techniques such as SRI, to be demonstrated.

Thus, even with relatively low yields of 3–4 tons per hectare and very small farms (a hectare or less), there is a potential for improved rural incomes and employment. Although survey data are not currently available to indicate how many farmers would fit into this scenario, it is clear that the number of efficient farmers with larger landholdings in RACPABA is considerable. As in most small-farm settings, these farmer leaders (officers of the cooperative who were interviewed) are often the “first adopters” and innovators who show the others what can be done.

32. Probably overly “disarticulated” (or uncoordinated) as measured by intertemporal and interspatial price correlation coefficients, a nice mini-research project using the CNSA database for someone with a flair for Excel spreadsheet number crunching.

Table 8. Hypothetical optimistic profitability of a 0.5-hectare rice farm, Artibonite

Receipts, expenses, profit	Haitian gourdes	US dollars
High gross revenue (4 mt/ha, 2 seasons at 25,000 gourdes/season	50,000	1,250
Low gross revenue (2 mt/ha, two seasons at 12,500 gourdes/season	25,000	625
Low expenses (no paid labor or land rent)	10,000	250
High expenses (paid labor and land rent)*	30,000	750
High-yield, low- expense net profit scenario	40,000	1,000
High-yield, high-expense net profit scenario	20,000	500
Low-yield, low- expense net profit scenario	15,000	375
Low-yield, high- expense net profit scenario	-5,000	-125

Source: Authors' calculations.

* Expense information from Bayard, "La filière riz," citing Experco field surveys of 2006 and ODVA improved paddy seed credit program data.

Overall, these simple hypothetical calculations also demonstrate the farm-level risk involved in rice production in an "unprotected national rice market," where bad weather, flooding, disease, or loss to birds and rats might greatly reduce realized yields.

National agricultural and trade policy changes

The Haitian Ministry of Agriculture, like other Haitian government units, faces important policy and staff challenges, especially because of earthquake losses, political turmoil, and obvious socioeconomic conflicts of interest between those who benefit financially from the massive importation of cheap US rice and those who derive their income from the national rice value chain.

Haiti's agricultural and overall economic policies were in "neutral," awaiting the eventual outcome of presidential and legislative elections and the formation of a new, functioning national government. Within the past year, FAO assisted personnel from MARNDR to produce a fairly sketchy national agricultural development policy³³ and a financially imaginative "national agricultural investment plan."³⁴ Neither document seems to have incorporated many of the development ideas from the 2005 joint World Bank-MARNDR agricultural sector diagnostic and development strategy.³⁵

Concerning the national rice chain, the new policy document,³⁶ *Haïti: Politique de Développement Agricole*, makes the following points:

- It acknowledges the failure of the economic liberalization policies of the past 25 years to assist in the development of the agricultural sector. In the rice value chain, as in most of the rest of the sector, the opposite has happened.
- In terms of trade policy, the document acknowledges that the 500 or so "suspensions" (exceptions) obtained from CARICOM to Haiti's obligations under the Treaty of Chaguaramas, especially the common external tariff, were for a five-year period and are certainly subject to renegotiation. The illogic and long-term "unworkability" of two nations on the same island, one with a 3 percent tariff on rice, and the other with a 20 percent tariff on the same commodity, is recognized.
- Reading between the lines, the document recognizes that many aspects of Haiti's trade agreements are not internally coherent, and, with respect to the domestic rice value chain, imposed hyper liberalization is certainly not coherent with the basic notion of value chain promotion for job creation and rural poverty reduction.

33. GOH/MARNDR, *Haïti: Politique de Développement Agricole*.

34. GOH/MARNDR, *Plan National d'Investissement Agricole*.

35. GOH/MARNDR and World Bank, "Développement Rural en Haïti: Diagnostic et Axes d'Intervention: Rapport de Synthèse" (Octobre 2005).

36. GOH/MARNDR, *Haïti: Politique de Développement Agricole*.

- Haiti's new agricultural policy is in line with generally accepted "best technical practices" in irrigated production, including the following:
 - The need for INARA and ODVA to make further progress on land tenure rationalization and cadaster registration of titles;
 - Recognition that part of the system maintenance problems in the Artibonite are a consequence of the failure to more fully involve farmer water-users in overall water management;
 - Recognition of weak or nonexistent extension services and applied agronomic and post-harvest technology research;
 - The inability of the decapitalized Banque de Crédit Agricole (BCA) to play its role in a badly needed functioning rural credit system that can incorporate innovations in microcredit that have been seen in other developing countries over the past 20 years;
 - The transfer of system water management responsibilities, especially at secondary and field levels to farmer-controlled community water management groups;
 - Improved seed multiplication and certification; and measures to rationalize fertilizer policy and reduce farmer cost through group purchase, input supply stores, and more carefully designed state subsidies; 37 and
 - Improved access to agricultural equipment through a program of subsidized medium-term credit, and assistance to rural service providers of repair and maintenance services and/or animal traction.
- Policy Orientation Framework: Because the sector is the "first pillar" of the country's PRSP strategy for growth and poverty reduction, the following priority points are relevant to the rice value chain:
 - Need to relaunch agricultural production through improved organization and coordination of commodity value chains, upstream

37. Subsidized urea and "complete" (20-20-10) fertilizer have come in under two programs, both for subsidized delivery to farmers: (1) the Japan KR2 ("Second Kennedy Round") annual fertilizer donations to the GOH, and (2) the GOH's own purchases in the Dominican Republic. Several problems are involved: (a) the amounts of subsidized fertilizer have varied from one period to another, (b) much of the subsidy is captured by middlemen, (c) In sum, because TSC10 sells at price parity with the imported (rebagged) rice coming from the US from different origins, increasing the import tariff incrementally could greatly add to the profitability of the local value chain, encouraging investment to further add to the efficiency of the local production and marketing systems. Consumers are unlikely to notice an annual increase of 3–4 percent in the tariff over a five- or six-year period.

Because the amount of subsidized fertilizer is less than farmer demand, its distribution is subject to quotas, influence, and corruption, and (d) this situation has destroyed Haiti's private sector fertilizer blending and distribution businesses.

and downstream from farm-level production, and through a better provision of key services to farmers;

- Call for rehabilitation of irrigation infrastructure, and the additional construction of rural access roads and rural markets;
 - Need to improve post-harvest crop processing and commercial marketing strategies for national crops to better compete with imports;
 - Need for “[r]einforcing production support structures via agricultural research, farmer training (especially via ‘farmer field schools’) and extension, strengthening OPAs (Agricultural Producers Organizations), and establishing common platforms for group action.”
- 2010–2025 Policy Framework: The following “basic principles” certainly apply to the needed modernization of the Haitian rice value chain: Improve the definition of the roles of stakeholders (state, producers, donors, NGOs, and civil society); good governance; community participation in design of programs and projects; promotion of women and youth; transformation of value chains into profitable professional activities.
 - Among the “priority objectives and expected results” of the policy are the following relevant points:
 - Adopt appropriate macroeconomic policies capable of guaranteeing more stable prices to producers;
 - Increase overall internal food security to from 43 to 75 percent of food produced in-country; and
 - Favor value-chain (filière) approaches that seek collaboration among stakeholders in constructing “inter-professional structures” that can gather around the same table the state, the private sector, and the producer organizations, regardless of whether the commodity is destined for export or the domestic market.

The policy document’s final section (implementation measures and monitoring and evaluation), is composed largely of well-intended bullet points that await government implementation. Most progressive actions for value chain development could be covered under this policy umbrella; there are no glaring “bad” or politically incorrect policies. The challenges are the need for policy coherence, agricultural institutional reform, and the resources and political will for serious implementation of value chain promotion.

Key institutions and their roles in the value chain

In our conception of the Haiti “rice value chain” we really have two chains, the national rice value chain and the imported rice value chain. The latter overlaps with the national rice value chain at the level of wholesalers, retailers, and consumers, who need to decide which rice to buy and consume at what price. We are mostly concerned with strengthening the national chain.

Current and future roles for the national rice value chain participants (either individuals or groups/institutions) are suggested in Table 9. This way of looking at the value chain suggests that roles of state institutions (MARNDR, ODVA, BCAs, etc.) are critical for providing an acceptable framework policy and regulatory framework for greater value chain success, but that most of the value chain involves private individual farmers and consumers, or organizations that belong in the private or cooperative/associative sectors. They are the main actors that need to come together to form the value chain *interprofession*, which, if it acts with unified purpose, can have a major impact in advocating for better policy and marketing support for the value chain.

In Table 9 current and possible future special roles for women, women’s groups, and youth are highlighted. Current roles for these groups may not remain exactly the same as the value chain develops and evolves in the future. These roles and how they might be better coordinated will be addressed in the discussion of areas for rice value chain improvement, later in this report.

Overview of the state of the value chain

Given the information on the proceeding pages, it should come as no surprise that the overall state of the Haitian national rice value chain is poor, that it has not grown significantly in total production over the past 40 years, and that its market share has shrunk in competition with inexpensive, imported US commercial and food aid rice.

Table 9. Haiti rice value chain: Stakeholders and their current and future roles in improving chain performances

Group or institution	Current status	Potential future roles, opportunities
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Central Government of Haiti (Parliament, MEF, MCI)	Laws, enabling legislation, sector policies: all quite weak, ineffective, and uncoordinated	Increase implementation funding in well-targeted national priority programs
EDH	Problem in coordination on Artibonite River water management with ODVA	EDH implements a revised version of its water discharge agreement with ODVA
MARNDR	Policies weak, some institutions (research, credit, extension) weak or missing	Larger donor-funded projects required to help reform and improve service delivery in classic state functions: applied research, technology transfer to farmers (including seed certification), coherent fertilizer policy, coordination of credit
ODVA	Weak performance in water management and extension	Institutional reform, training, greater resources and greater results accountability; more emphasis on partnerships with farmer production, water user, and post-harvest groups and the private sector on fee-for service
Direction Départementale d'Agriculture, Bureau Communal d'Agriculture	Are responsible for MARNDR services (extension, material assistance) to small and medium perimeters	Institutional reform and new operating models would allow these revitalized institutions to play a role in extension, resource mobilization, partner coordination, and technology transfer
Promotion and advocacy groups (PAPDA and others)	Limited effectiveness; need to work closer together with NGOs and value chain groups	Roles and effectiveness will improve as political and economic democracy (including targeted lobbying) improve
Private Input suppliers	Their position has been undermined by competition with state and NGO and donor projects doing seeds and fertilizer	Private sector needs to be selectively reintroduced as a value chain partner in input supply, field and post-harvest mechanization, and larger-scale marketing
Producers	Average farm size too small for escape from poverty and gain from economies of scale, mechanization	Work with farmers on improved field agronomy, including SRI; begin process of consolidation of parcels; slow increase in average farm size
W: Special labor roles	Women active in all crop activities, especially post-	Farmer field School approach? Assist interested women in becoming farm operators; dry season diversification and post-

Y: special opportunities in future	harvest (threshing, drying, milling, marketing) and preparing meals for hired labor	harvest activities. Unclear how gender roles will evolve with modernization of value chain Trained youth may have opportunities if new land reform parcels/farms available
Farmer associations, cooperatives, and federations	A number exist; many need institutional strengthening and linking together in common actions	Much training and institutional strengthening needed for associations and coops; CLES social enterprise model in North East should be watched; RACPABA has shown potential for stronger federations and collective actions
W: Dry-season vegetable production and marketing groups	Status unknown	May be possible in some areas to promote specific female-production crops, especially for diversification/dry season production
Public (BCA) and private banking/credit	Credit very limited and at high interest rates; specialized farm credit and microfinance for inputs almost nonexistent; special links with UNITRANSFER	Many opportunities to assess and address micro and MT credit needs for production, post-harvest marketing, and small-scale mechanization; potential use of <i>warrantage</i> , or warehouse receipts
Private and cooperative small farm machinery supply and repair	Most small machines handled by ODVA or farmer associations with unknown impact on sustainability	Need more private sector involvement in this area and greater ownership by individual farmers assisted by trained mechanics
Y: Special opportunities		Special opportunities for youth to get involved in a segment that will grow in the future
Post-harvest paddy collection	Newer roller mills with better performance replacing hammer mills	Can have more private sector involvement in the evolution of milling and creation of special "rice products" (e.g., bagged parboiled Sheila rice)
W: Women's role	Women are active in paddy drying and milling (as employees or clients), parboiling, and associated market sales	Women's roles will continue to be important in this value chain segment but may also evolve as the chain grows and changes

Private and cooperative paddy millers and product creation	Newer roller mills with better performance replacing hammer mills	Can have more private sector involvement in the evolution of milling and creation of special “rice products” (e.g., bagged parboiled Sheila rice)
W: Special role in parboiling and as mill assistants	Women are active in paddy drying and milling (as employees or clients), parboiling, and associated market sales	Women’s roles will continue to be important in this value chain segment but may also evolve as the chain grows and changes
Urban rice wholesalers and retailers	Need to become involved in acquisition of national rice as well as imported	Opportunity for more structured groups and somewhat larger transactions as the national rice trade evolves
W	Women very involved in small retail trade	
Consumers	Consumption habits have changed greatly	Need for value chain promotion, nutrition and “buy local” training, consumer panels; some of these messages can be targeted to female shoppers, cooks

Source: Authors.

W = Special roles for women; Y = Opportunities for youth.

One of the most important factors in this situation is the existence of incoherent governmental sector and national trade policies. One can ask whether the main thrust of these Haitian policies is to promote or punish national production. In addition are poorly functioning services from ODVA coupled with high land rents and unclear fertilizer policy with “quota problems,” resulting in “hit and miss” availability and fluctuating prices for farmers.

A second major conclusion is that the *filière* (value chain) is not well organized or coordinated on a nationwide basis, and there has been no effective “buy local” campaign, led by national political authorities. This oversight is hardly surprising given the ambivalence of national policy on whether to make rice production a priority or not.

Several other summary conclusions about the value chain are also important to consider:

- The 50-plus-year-old Artibonite system counts for 75–80 percent of national production, but the irrigation infrastructure is incomplete and in poor shape, especially second- and third-level canals and drainage.

- The Artibonite system is also characterized by excessive block-to-block water use, currently no price for water used, and consequently no local funds available for system maintenance. Water-user groups are starting to organize, but such organization must be a future priority in the valley.
- Rice milling and marketing (including storage facilities that are generally lacking) is inefficient; losses are high, but can be reduced.
- Labor shortages in production zones increase the need for appropriate small-scale mechanization (i.e., *motoculteurs*) that should be privately managed. The purchase and use of larger tractors are less likely to be sustainable.
- Opportunities exist for the use of the SRI method to raise paddy yields and reduce per hectare costs in well-drained blocks.
- Yield/taste tradeoffs and rice variety choices (TCS10, PQ4, Sheila, 20 local varieties, etc.) are complex and will be discussed in a later section.

Despite these conclusions, it is our view that with better value chain coordination, improved national rice trade and other policies, and improved extension of productivity-increasing technologies, Haiti could optimistically expect to increase the proportion of national production in rice consumption from 20 percent to perhaps 50 or 60 percent over the next 10 to 15 years.

What is needed is a transitional strategy to gradually reduce imports, to increase national rice marketed surpluses and rice farmer income (largely through productivity increases and chain marketing losses), and to encourage productivity increases in other national food value chains to promote a return to more balanced and locally sourced diets.³⁸

38. A return to more-balanced and locally sourced diets would involve greater consumption of other grains such as sorghum and maize, and the use of plantains, beans, and the wide variety of roots and tubers that, until recently, made up regional patterns of substitution in food consumption – such as being promoted by Oxfam Quebec.

Areas for rice value chain improvement

As the previous overview would suggest, the performance of the Haitian rice value chain can be improved in many areas. On the following pages we suggest specific improvements. These suggestions are directed primarily to the international and national NGOs working in Haiti that may be able to intervene with resources a bit more limited than those that can be mobilized by donors with “deeper pockets,” such as the IADB, World Bank, and bilateral agencies. However, we hope that readers from those institutions find these observations of interest as well.

Farmer organization

Working with rice farmers through existing or new associations (by this we mean associations, cooperatives, public-private partnerships, *groupements d'intérêt économique* – a new form of legally recognized business organization, starting to be used in agriculture in some countries – social enterprises, and federations or networks of the above) is clearly the way value chain development must be conducted in Haiti, given the small average size of rice farms across the country, and the subsistence and poverty reduction needs of the people who farm the land.

As noted earlier, most of these groups are weak and in constant need of training and other types of support. Assistance efforts should be initially confined to those groups that have focused on production and post-harvest processing and marketing activities. As a further complication, associations do not have a well-defined legal status such as that which applies to certified cooperatives. The legislation and implementation measures required to “legalize” other forms of economic organization need attention.

The RACPABA model of working with a group of member associations and cooperatives has been successful and should be expanded in the Artibonite Valley and other geographically limited production zones. The possibility of linking these groups together into a national federation should also be explored.

Training in cooperative or association development can be facilitated by farmer field-school facilities that can be run by a local management NGO, with or without direct government subsidies. An inventory of available state or privately

owned training facilities would be useful. For example, a donor may wish to finance the construction or rehabilitation of a farmer training center in the Artibonite Valley containing basic dormitory, dining, and classroom facilities.

Value chain coordination, promotion, and advocacy

The Haitian rice value chain is only partially and loosely coordinated. An effort to build an interprofessional organization (a national rice association) could pay off in the context of a priority national program to promote the development of this value chain.

As the recent national agricultural development policy document puts it, the development policy will

favor value-chain (filière) approaches that seek collaboration among stakeholders in constructing “inter-professional structures” that can gather around the same table the state, the private sector, and producer organizations, regardless of whether the commodity is destined for export or the domestic market.³⁹

The organizations and groups listed in Table 8, plus development partners, represent a starting point for the construction of a national association having the following objectives:

- **Identification of the groups, institutions, and individuals** who are interested in the promotion of the rice value chain and improving its profitability for the benefit of all participants;
- **Facilitation of information exchange** on production, post-harvest, marketing, and policy issues of broad interest to the group. This exchange could be in French and Creole, for example, and facilitated by a quarterly e-mailed newsletter, by occasional “issue bulletins,” and by periodic meetings or conferences;
- **Development of mechanisms to promote greater commercial integration** and the ease, or “fluidity,” of commercial transactions. For example, the association could consider a member-only database on potential commercial buy-sell opportunities open to those groups engaged in domestic rice trade.⁴⁰ Other activities could involve input supply, mechanization of land

39. GOH/MARNDP, Haiti: Politique de Développement Agricole.

40. Such a database was created in Burkina Faso by grain traders assisted by GTZ funding. Summary data on prices and aggregate quantities were publicly available on the Internet, while private transaction-level data were only accessible to qualified traders. Data collection was done by traders using an inexpensive group cell-phone texting system.

preparation and post-harvest activities, and promoting greater use of formal sector bank or microfinance credit; and

- **Commitment to Haitian rice promotional and advocacy activities**, such as promotional activities geared to expanding public knowledge, at all income levels, of the different types of Haitian rice, and advocacy activities decided democratically by the association membership and appropriate to evolving national and international political and policy circumstances.

While such a national rice association would be initially subsidized by NGO and/or donor funding, the operational objective would be to become a dues-paying organization where members would find it in their interest to contribute and cover operating costs. (Sometimes this type of organization is plagued by “free rider” problems, so measures to avoid this pitfall should be in the program design from the beginning.)

Data collection on cost of production and marketing

Good data and analysis on the costs and returns of activities at different stages of production, processing, and marketing are essential to understanding the socioeconomics of the value chain – and to recognizing who benefits and loses under current conditions and alternative scenarios. Ideally, MARNDR would have an applied research unit or one operated jointly with the national statistics institute that would handle the data collection for updating production and marketing budgets. Given circumstances, perhaps a joint GOH-donor-NGO supported unit, such as CNSA, which already has data collection functions, could help, with the assistance of local consultants, to develop an appropriate survey method. In addition, the “average farmer spreadsheet production budget” would allow analysts to do quick simulations of the impact of proposed changes in input and product prices that would result from policy changes (such as gradually increasing the tariff on imported rice).

Production

Access to irrigation water, pricing, water user groups

Access to water when needed – and an ability to drain it away when not – are the basic requirements for any successful irrigation system. The responsibility for accomplishing these functions in small-farm systems is almost always divided between a central irrigation authority and farmer water-users. The authority has responsibility for macrolevel water management and infrastructural maintenance of the dams, main and often secondary canals, and higher-level drains.

Responsibility for maintaining third-level canals and drains (usually just lined with dirt) is almost always left to community water-user groups. Farmer-paid water-user fees are intended to cover the costs of mechanical dredging and repair of higher-level structures, while farmer labor, sometimes complemented with use of smaller machines, will take care of the smaller, simpler structures closer to farmer parcels.

This system of water-user fees and correct infrastructure maintenance has largely collapsed in the Artibonite Valley and needs to be reestablished. Doing so is a main responsibility of ODVA, in conjunction with farmer associations closer to field level. Water-user fees and infrastructure maintenance should be central to ODVA reform and restructuring, a precondition to continued phase 4 IADB support. The operation of the water management system, including the correct use of farmer water fees, should be democratically supervised by a board composed of ODVA and farmer representatives. The role for NGOs will be to work with associations so that farmers can assume their system responsibilities and receive the “water control benefits” they deserve – and that are needed for attaining higher paddy yields.

The successful reestablishing of a realistic price for water in the Artibonite, one that covers all or some major portion of recurrent maintenance costs of the irrigations system,⁴¹ will be one of the key indicators of ODVA restructuring.

Seeds (and seed certification), fertilizer, and other inputs

Selecting the right rice varieties that have the yield, disease resistance, and length of growing season characteristics desired by farmers, and the taste characteristics sought by rice consumers, is one of the main jobs of the plant scientists associated with any national rice value chain.

The Haitian agronomic research system appears to be unusually weak (even when compared with the agricultural R&D systems of comparable African rice-producing countries). Collaborative linkages in Haiti with the major international and regional rice research institutions, such as the International Rice Research Institute, the International Center for Tropical Agriculture, Africa Rice (formerly the West Africa Rice Development Association), and others, also appear to be weak. Scientists from the faculty of agriculture of the University of Haiti are involved – to a degree – in varietal selection and field agronomy testing on an occasional contractual basis. Owing to resource constraints, the actual role of the Centre de Recherche et de Documentation Agricole (at the University in Port-au-Prince) is unclear to us.

41. The central government could decide that it wants to cover 25 percent of system maintenance costs as a permanent subsidy to the system, for example.

Selecting rice varieties is a state responsibility, and these systems desperately need to be strengthened. In the research and testing void, the TTM has been playing the dominant role in varietal testing and selection. It was key in the introduction of TCS10, a Taiwanese variety, and in the testing and spread of the PQ4 variety from the Dominican Republic.

Table 10 lists the top 10 rice varieties that farmers grew in the Artibonite Valley, as reported by USAID.

Table 10. Percentage of Artibonite Valley rice farmers cultivating varieties (multiple varieties possible)

Variety	Share	Variety	Share
TCS10	61	Ti Ayitienne	13
Bogapote	40	Tididji	13
Malaika	31	Berha	13
Sheila	14	Shelda	6
Sherline	14	Ti Zepon	4

Source: USAID, Haiti Market Study.

Determining which varieties will work well in different parts of Haiti is a complex challenge calling for continual field-level experimentation. Among the issues that plant breeders and agronomists must deal with are yield, disease resistance, lodging (falling over) under high wind conditions, tolerance of flooded or parched soil conditions, length of growing season,⁴² and consumer taste preferences (with and without parboiling).

In addition, in the future it may be interesting for Haitian researchers to devote attention to improved upland (rain-fed) low-input rice varieties, which may fit into cropping patterns in some of the higher-rainfall parts of Haiti or where soils tend to hold moisture longer, thus not having to worry about irrigation system development and maintenance costs.

42. An interesting example of the complexity of growing season length and variety type is the PQ4 variety from the Dominican Republic. It is relatively high yielding and tolerates field flooding (in contrast to TCS10), but has a long initial growing period (150 days). However, because it is a tropical rice variety, a good second crop can come from the harvested plant stubble and root system (*riz de repousse*, in French). The second crop from the same planting generally produces the same yield and can be harvested after only 110 days. Thus, two crops of rice can be had in a total of 260 days with only one rice seedling transplanting. Thanks to Shui-Sung Hsiang, chief of the Taiwan Technical Mission (TTM) in Pont Soudé, Haiti, an admitted PQ4 promoter, for this example.

Field-level technical assistance projects, which have a yield increase objective, should of necessity have a strong “demonstration plot” component as the most effective mechanism for accelerating the spread of improved production technologies.

Subsidized fertilizer is a production factor that is definitely helping Haitian rice farmers. The only problems with the current program run by MARNDR is how it is run and the fact that demand outstrips supply, leading inevitably to “quota distribution problems” (capture of subsidy by middlemen, favoritism, etc.). Specialists should be able to design a better system that avoids these problems. The use of other agrochemicals in rice production, especially herbicides and pesticides, is relatively minor, but should be carefully studied to avoid future farmer and consumer health problems.

Land preparation, small-scale mechanization, improved agronomy, SRI, and possible crop diversification

One of the keys to producing high yields from irrigated paddy lands is correct land preparation to receive transplanted rice seedlings. To prepare land by hand is one of the most physically difficult tasks facing small-plot producers. In addition, low rice prices and alternative employment opportunities in the neighboring Dominican Republic have produced a relative labor shortage in zones such as the Artibonite Valley. Under these conditions the use of animal traction (ideally water buffalo as in Southeast Asia, but not the case now in Haiti) or small two-wheel or four-wheel tractors has become more common in Haiti as it has in most other countries.

Potential for wide use of power tillers

Given the size, mechanical complexity, and increased difficulty of sustainable management, four-wheel tractors (33–90 hp) are less likely to be sustainable in Haiti at this time. Smaller, cheaper, two-wheel tractors (or power tillers, or *multiculteurs* in French, generally in the range of 12–19 hp) are more likely to find a sustainable home with specialized individual farmers or rural mechanics, who can make them income-generators by providing custom hire land-preparation services to their neighbors.

A successful model of power tiller introduction to very poor small farmers has been the Coopérative Artisanale des Forgerons de L’Office du Niger (CAFON) blacksmith cooperative in Niono, Mali, in the middle of the government of Mali-run Office du Niger (ON) irrigated rice production zone (which covers about twice as many irrigated hectares as in the Artibonite system). There, a cooperative of 22 blacksmiths (aided by Dutch technical assistance over the past 15 years) has developed a business importing partially assembled, good-quality

power tillers from Thailand in 40-foot container loads, assembling them in their workshop, and having member blacksmiths provide after-sale servicing to farmers in their respective portions of irrigated areas. Medium-term (four-to-five years) agricultural bank credit allows farmers to buy these tillers and cart attachments from CAFON.⁴³ Five years ago, approximately 500 tillers were being used on 60,000 irrigated hectares in rice production.

System of Rice Intensification (SRI)

For this rapid overview, SRI will serve as a proxy for the introduction of a wide range of possible “improved agronomy” approaches to increasing field-level rice productivity and profitability. What is SRI? A recent publication defines this new approach to intensive rice production as follows:

SRI is a set of alternative crop management practices, developed in the 1980s in Madagascar to benefit farmers with small landholdings. SRI increases the productivity of resources used in rice cultivation, reducing requirements for water, seed, synthetic fertilizers, pesticides, herbicides, and often labor – especially tasks performed by women.⁴⁴

In experimentation in eight Asian countries, SRI methods⁴⁵ led to an average 47 percent yield increase, 40 percent water saving, 23 percent reduction in costs per hectare, and 68 percent increase in net income per hectare.⁴⁶

In recent years, two projects have generated interest in bringing SRI to Haiti. One is work being done by Cornell University’s International Institute for Food, Agriculture, and Development, which has been promoting multisite testing of SRI in Haiti with local NGO and project partners.⁴⁷

The second project is the new, large USAID-funded WINNER project, which is bringing development work to two watershed areas in the Port-au-Prince region (Rivière Grise, south of Port-au-Prince, and the Cul-de-Sac area north and

43. The Coopérative Artisanale des Forgerons de l’Office du Niger (CAFON) has made the power tiller the centerpiece of the small-farm mechanization program in the Office du Niger (ON) by providing carts that convert the tiller into a four-wheeled vehicle for transporting people and product, a variety of paddy land implements (moldboard plows, harrows, leveling bars, cage wheels), and relatively low-cost post-harvest implements, including a paddy thresher with winnowing attachment, Engelberg hammer mills, and a smaller milled rice sorter/cleaner that allows broken rice to be separated from whole-grain rice and for small stones and other impurities to be removed.

44. Africare, Oxfam America, World Wildlife Fund–International Crops Research Institute for the Semi-Arid Tropics (WWF-ICRISAT), *More Rice for People, More Water for the Planet* (Hyderabad, India: WWF-ICRISAT, 2010).

45. A quick overview of SRI: a much smaller number of rice seedlings are transplanted, less water and fertilizer are used per hectare, and rotary hand weeder are employed because the rice is not constantly flooded, all giving the rice plants a chance to “more fully express themselves biologically”.

46. *Ibid.*, p. 32.

47. See Erika Styger, “Introducing the System of Rice Intensification (SRI) to Haiti” (Cornell International Institute for Food, Agriculture, and Development field visit report, September 2010). The institute has also prepared an excellent photo-based *fiche technique* (technical brief) for SRI in Haitian Creole.

northeast of Port-au-Prince). In these areas SRI rice has been introduced as a rotation crop (to bananas and other crops) with the assistance of an experienced Madagascar specialist who has worked with SRI for many years.⁴⁸

Applying SRI in the Artibonite Valley faces challenges, however. SRI requires that farmers be able to follow the prescribed schedule for flooding and draining their paddy land. Because much of the Artibonite Valley is chronically flooded, application of SRI may be limited unless drainage can be improved in specific blocks. In addition, as noted earlier, some rice varieties do better than others under excess water conditions.

Crop diversification

As in many rice production zones around the world, paddy in the Artibonite Valley is produced by nearly all farmers in the rainy season of the year. In the dry season, depending on their farm's location in the system, a third of farmers may not have enough water to harvest a second crop of rice or may find domestic and export crop marketing opportunities that offer better prospects for farm profit and production intensification. Vegetable production for the fresh market is certainly important in this region in the dry season.

One of the technical questions then becomes how to get available water onto the diversification crop. Usually, water tables are fairly high, allowing the use of animal-powered water lifting systems or foot-powered "treadle pumps" that have been developed for use in other parts of the world. The next question is post-harvest marketing of the huge volumes of fruits and vegetables that can be intensively produced on the thousands of available irrigated hectares. In general, Haiti is well positioned to export a wide variety of fruits and vegetable to the US and other regional markets if production, processing, cold chain, and value chain management problems can be overcome (not a small "if," but other parts of the region have shown it to be possible). The easiest way to estimate the extent of this potential in the Artibonite Valley would be to look at the proportion of land that produces two paddy crops in the perimeter (information that was not available to the authors but is potentially available in the field). Once a coordinated value chain approach is applied to working with "diversification farmers," it is clear that opportunities for private sector investment in various aspects of production, processing, and marketing of seasonal vegetables would be substantial.

The bottom line is that examining diversification opportunities in the Artibonite Valley – for either domestic markets, regional markets, or high-value export

48. Joeli Barison, "Rapport d'Intervention sur la Conduite des Sites d'Expérimentation SRI et les Résultats Obtenus" (USAID WINNER Project document, Octobre 2010).

markets — should be a priority for programs with an objective of increasing farm family income.⁴⁹

Rice farm credit

Modern rural credit systems are not well developed in Haiti. As in most countries, microcredit tends to develop first in urban areas, where opportunities abound for its use in trade, utility bill collection, and the acquisition of household appliances, motorbikes, and the like. We did not have the time to explore this topic in detail, but the opportunities (and pitfalls) for increased credit use in irrigated rice perimeters are certainly present.

The Intermón Oxfam RACPABA program uses credit in two unconnected ways: (a) Inputs are provided on credit to the minority of RACPABA association members who are engaged in producing improved paddy seed. Reimbursement rates are good, and there is some form of “collective responsibility” (*caution collectif*) for making sure all debts are covered; and (b) small amounts of credit are provided to association member women to use in purchasing paddy (as a small business). The paddy is delivered to RACPABA roller mills for their commercial milled rice operation, feeding into the large-scale local purchases undertaken recently by WFP.

The northeastern Maribahoux Plain area on the Dominican border production credit (for seeds, fertilizer, and paddy land preparation) was provided in kind by Dominican agribusiness people who came to Haiti to work with Haitian rice farmers in that area.

Our principal observations on the RACPABA credit approach are that it is not widely offered to all association member families, nor does it cover family credit needs throughout the year.

Alternative models that might be studied for their potential long-term applicability in the Artibonite Valley include the Faso Jigi credit and marketing system, an elaborate cooperative development and comprehensive system that has been supported by the international development arm of the Québec farmers union, Union des Producteurs Agricoles (UPA),⁵⁰ in irrigated (rice) and dryland (sorghum, millet, and maize) cropping areas in Mali, including rice producers in the Office du Niger. Faso Jigi involves a well-supported agricultural development bank (Banque de Développement Agricole, BDA, serving all of Mali),

49. A good example is the export of Madame Francique mangoes from the Artibonite region during the early summer mango season (April–June). Mango export is the main business of the Société d'Exportation de Fruits et Légumes (also known as Agro-Services), interviewed in Pont Soné in late January, 2011.

50. The Union des Producteurs Agricoles (UPA) Développement International's headquarters are in Longueuil, Québec. See www.upadi-agri.org.

which lends capital to three or four well-established microfinance organizations that in turn provide seasonal production credit (for seed and fertilizer primarily) to members of farmer associations.

The key to maintaining a good reimbursement rate for this seasonal credit in Mali is the use of a mandatory “warehouse receipt” system (*warrantage*, in French), which requires that farmers make a mandatory deposit of paddy in their association warehouse at harvest, against which they receive a harvest-time loan equal to 80 percent of the target price for the paddy. Once the paddy is milled and sold, and marketing expenses are deducted by the Faso Jigi network, farmers receive a second payment on a prorated basis. The 80 percent loan allows farmers to receive a significant payment for their paddy at harvest time (when family needs for cash are high) and to take some advantage of seasonal rice price swings (which are higher in Mali because most irrigated and dryland crop production takes place in the rainy season, followed by an eight-month dry season). The interesting features of this credit system are that it involves collaboration among independent microcredit institutions (which have their own credit field agents) and all producer members of farmer associations, and that it responds more completely to farmers’ annual credit and cash-flow needs.

Other models of traditional, high-interest credit and various NGO credit system have undoubtedly been used in other irrigated perimeters in the country. Providing affordable credit to farmers on a sustainable basis has been one of the biggest challenges facing development programs over the past 50 years and is not an area for the faint of heart.

Post-harvest processing and marketing

Post-harvest processing and marketing is another area where rice value chain improvement programs can make a big “poverty-reduction difference” by reducing the percentage of rice lost between harvest and consumer and by increasing the quality of the rice put on the market, so that it is more competitive with imported rice. Both endeavors have the potential to substantially increase aggregate profits for the value chain as a whole. They also can provide increased per hectare profits to farmer producers to the extent that farmers can improve their collective market channel bargaining position through association development and additional support to democratically controlled marketing networks such as RACPABA.

Harvesting, threshing, local transportation to mills

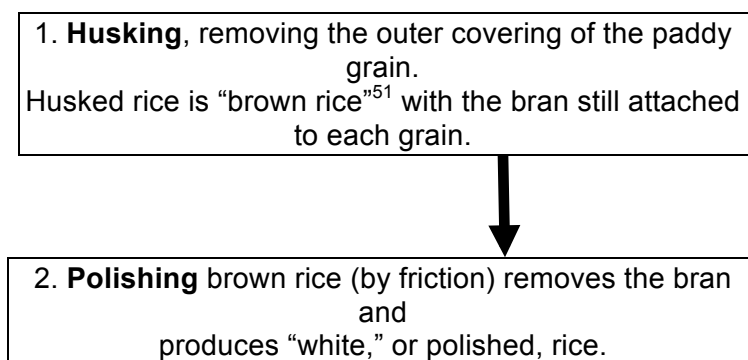
Harvesting paddy on small parcels is likely to continue to be done by hand with harvesting knives. Demand is substantial for some mechanical assistance in threshing and winnowing; small motor-driven threshers, with winnowing attachments, are available (in the \$2,000–3,000 range), and these machines might be appropriate for use by production and marketing associations. If the threshers can be towed to fields, losses—including up to 15 percent of paddy grains that have to be manually separated from the rice straw—could be substantially reduced.

The adequacy of canal-side roads or paths to access paddy blocks is an important question if the desire is to bring mechanized threshing to farmers' fields. Horses seem to be plentiful in the Artibonite area, and they need only a small path for access. Access to paddy blocks is a topic that requires further evaluation; it may be a criterion in selecting new areas for technical assistance programs.

Milling (husking and polishing), cleaning, bagging, branding, and market positioning

Milling is a critical part of the rice value chain and the production of quality products. Figure 7 outlines the stages of milling.

Figure 7. Stages of rice milling



The Engelberg one-stage “hammer” mill, referred to as *la décortiqueuse traditionnelle* in Haiti, accomplishes both milling tasks in one compact machine, but can result in 25–30 percent of the rice grains being broken in the process. The improved two-stage “roller mill” has two internal sections, one that does the dehulling, and a second that does the polishing. Its use reduces grain breakage to 5–10 percent. In these mills, the husks and the bran are expelled from the mill

51. Although brown rice is more nutritious than white rice, it has a much shorter “shelf life” and goes rancid rather quickly.

separately, which facilitates selling the bran as an animal feed and disposing of the husks.⁵²

Once rice has been milled by one of the current small mills or in a larger industrial mill, it requires cleaning to remove debris and separate out remaining broken grains, which can be sold as a cheaper byproduct. Cleaning equipment (using screens and blown air) of different sizes and efficiencies is available. Such equipment might be used at a central cleaning and bagging facility, which could be operated by marketing co-op such as RACPABA. Finally, cleaned rice can be bagged in sizes ranging from 5 to 110 lb (50 kg). RACPABA, with assistance from UNITRANSFER, had bags ranging from 5 lb to 25 kg printed in the DR for the rice it has marketed with its own attractive “Labonite” label. In its sales to WFP it presumably used the WFP’s own 50 kg bags.

Parboiling

This processing technique as it is practiced in Haiti involves soaking certain preferred paddy varieties (Sheila or its closely related varietal “relatives”) in water (with a bit of bleach) for five days, then boiling it for a certain length of time, depending on the variety. This “preboiled” paddy is then dried and milled. The parboiling tends to drive some of the nutritional value of the bran into the rice starch, so the resulting rice has approximately 80 percent of the nutritional value of brown (non-polished) rice and takes on a yellow color and a nuttier taste. It also mills with somewhat less grain breakage, and the resulting milled rice cooks a bit quicker than non-parboiled rice. Given the extra work required, it is not surprising that the urban market price for parboiled Sheila rice is consistently more expensive than other rice (as shown in Figure 6).⁵³ Parboiling offers income-earning opportunities to rural women, who purchase local paddy, parboil it, have it milled, and then resell it to urban buyers.

Storage

Warehouse capacity at the farm or association level is inadequate to provide the capacity to intervene in Haiti rice markets on the scale needed to have greater market power. This insufficiency is probably even more acute at the network (RACPABA) or federation level, where marketing power would be even more useful. Warehouse capacity is a topic that needs more exploration in future studies of the marketing channels in the Haitian rice value chain. Having the marketing capital or commercial bank credit needed to operate in national rice

52. Note: Husks are currently used occasionally as insulation for the storage and transport of ice blocks; they could be used as boiler fuel for parboiling as well.

53. Uncle Ben’s rice from the US is industrially parboiled, a practice that dates to World War II when the total output of the company was purchased by the US armed forces. Minute Rice is also a form of parboiled rice that is cooked even longer, so that the resulting dried product needs only another minute to be fully cooked.

markets will be an important complement to increased storage and processing capacity at the upper levels of the cooperative marketing portion of the value chain.

Targeted applied technology research

This report makes it clear that the performance of the Haitian rice value chain could benefit enormously from applied technology research. Employing productivity-enhancing innovations to large numbers of paddy hectares or to tasks in the processing and marketing of this local foodstuff has great potential benefits. If we assume that more than 120,000 households are involved in rice production in Haiti and that perhaps 25 percent of that number are directly involved in processing and marketing the crop (30,000), profitability increases in the value chain might affect up to 750,000 mostly poor people, or 7 or 8 percent of the entire national population. Applied technology research could have immediate impacts on the Haitian rice value chain in three priority areas:

- **Agricultural research** (including biological and agromechanical technologies) involved in varietal selection and the applied agronomy of production. The interest that has been shown recently in the SRI approach to improving rice profitability for farmers is a good example of opportunities that are present. Agricultural research is normally a state function, but it could involve new partnerships between revitalized GOH institutions and bilateral, international, and NGO partners.
- A rapid diagnostic study of Haiti's applied research institutions and how available funding (from multiple sources) might be effectively channeled to solve some of the very evident productivity problems in Haitian rice production is necessary at this point. This type of diagnostic work used to be performed very competently by the International Service for National Agricultural Research (ISNAR). Since the Consultative Group on International Agricultural Research shut down ISNAR and transferred its functions to the International Food Policy Research Institute (IFPRI), the performance and effectiveness of this specialized diagnostic capacity has been greatly diminished in the international system. However, it should be possible to identify a small team of experienced professionals capable of undertaking a pragmatic system diagnosis and proposing practical solutions to allow a donor-funded but Haitian government-coordinated system to begin tackling priority applied agronomic problems, while longer-term solutions to reestablishing a sustainable, results-oriented Haitian agricultural research system are developed.

- **Food technology.** Apparently no publicly funded group is working on food technology in Haiti. This work (perhaps undertaken by public-private partnerships) is needed to address problems both in the rice value chain and in competing food value chains based on the other grains, plantains, roots and tubers, and legumes that were the foundation of Haitian diets until the past two decades. Opportunities in this area were described in the section on consumption trends and consumer preferences in this report.

In the rice value chain such applied research could focus on the competitiveness of Haitian rice varieties with imported varieties – based on applied consumer panel taste-testing and the identification of preferred organoleptic (taste) characteristics, including the preference by many consumers for parboiled, “yellow rice.” When looking at parboiling, one of the obvious problems is the extra energy required in small-scale parboiling. Larger-scale technological solutions could allow local processors to both gain economies of scale in parboiling and improve the quality of this local “high-end” product, as part of a more comprehensive strategy to address all income segments of the Haitian rice-consumption market.

- **Smaller-scale mechanization.** Earlier in this report we addressed changes in mechanization of land preparation and other production-related activities (such as rural transport and post-harvest threshing) and in the processing segment of the value chain with rice milling. Value chain development programs may wish to consider the provision of targeted technical assistance in these areas, also probably done under public-private partnership or cooperative arrangements with firms and/or training institutions with an interest in selling appropriate machinery to farmers, rural mechanics, and farmer groups and in providing after-sale servicing and spare parts.

People interviewed, Jan. 24– Feb. 2, 2011

Government of Haiti

Pierre Gary Mathieu, Coordinateur National, Coordination Nationale de la Sécurité Alimentaire

Serge Milius, Director, ODVA

Charles Montès, Directeur de l'Infrastructure Agricole, MARNDR

Maurois François, Chef du Cabinet Ministériel, MARNDR

Marie Eunide Alphonse, Directrice, Centre de Recherche et de Documentation Agricole

Professor Jocelyn Louissaint, Soil Scientist, Faculty of Agronomy, State University of Haiti

Tescar Roberspierre, Agronomist, Faculty of Agronomy, State University of Haiti

Haitian private sector

Fedner Joseph, medium-scale rice and corn importer, Port de Paix

Joinème Jean-Pierre, mill owner, Pont Sondé

Jean Joseph Labossiere, Director General, Uni-Transfer

Haitian civil society

Camille Chalmers, Executive Director, Plateforme Haitienne de Plaidoyer pour un Développement Alternatif (PAPDA)

Ena Menager Derenoncourt and Claude Derenoncourt Jr., Société d'Exportation de Fruits et Légumes, Pont Sondé

Albert Pierre Paul Joseph, Program Director, Collectif de Lutte contre l'Exclusion Sociale (CLES)

RACPABA

Laner Saint Jean, Coordinator, Artibonite

Dieujuste Frantz, CODEL (Listere)

Chéry Antony, COPG (Grand Saline)

Bien-Aimé Dieula, SOCAM (Mauger)

Rev. Paul Evra Sauveur (Des Dunes)

Oxfam

Yollette Etienne, Country Program Manager, OA in Haiti

Max Theodore, Financial and Systems Manager, OA in Haiti

Amber Munger, Livelihoods Program Manager, OA in Haiti

Sarah Belfort, Program Associate, OA

Marc Cohen, Senior Researcher, OA

Gilda Charles, Haiti Policy Associate, OA

Myra Foster, Public Health Specialist, OA

Kenny Rae, Acting Shelter Coordinator, OA

Morgan Brown, OA

Djenane Gaspard, Office Manager, OA in Haiti

Budry Bayard, Livelihoods Consultant, OA

Marc Perron, Security, OGB (Oxfam Great Britain)

Ronald Naar, Security, OGB

Luc Saint-Vil, Livelihoods Coordinator, OGB

Marie Denise Samson, Rice Program Coordinator, Intermón Oxfam

Douby Exantus, RACPABA Project Manager, Intermón Oxfam

Philippe Mathieu, Country Director, Oxfam Québec

Pierre André Guerrier, Oxfam Québec

Marc Desilets, Financial Manager, Oxfam Québec

USAID and USAID contractors

James Wooley, Economic Growth Office, USAID

Erika Styger, SRI International Network and Resource Center, Cornell University

Jean Robert Estimé, Chief of Party, WINNER Project

Roosevelt Decimus, Livelihoods Director, WINNER Project

Other donors and technical assistance groups

Giovanni Rusciani, Program Manager, Rural Development, Environment, and Food Security Section, European Union mission in Haiti

Shui-Sung Hsiang (Carlos), Chief at ODVA, Pont Sondé, Taiwan Technical Mission

Hugues Joseph, Directeur Adjoint – Fonds Locaux Manager, Centre de Coopération Haiti-Canada

Giles Damais, Senior Specialist in Natural Resources and Environment, IDB

Doriscar Adalgo, Agronomist, IDB

UN

Rocio Cardenas, Food Procurement Local Purchases, WFP

Ari Tubo Ibrahim, Representative, FAO

Volny Paultre, Chargé de Programme, FAO

Etienne Peterschmitt, FAO

Carmen Morales, FAO

Aloys Nizigiyimana, Hillside Development Specialist, FAO

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Oxfam
America

Headquarters

226 Causeway Street, 5th Floor
Boston, MA 02114-2206
(800) 77-OXFAM

Policy & advocacy office

1100 15th Street, NW, Suite 600
Washington, DC 20005
(202) 496-1180

oxfamamerica.org

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