



GRENADA

AGRICULTURAL RISK MANAGEMENT

IDENTIFICATION MISSION

July 13 to 17, 2009

SUMMARY OF FINDINGS



EUROPEAN COMMISSION

ALL ACP AGRICULTURAL COMMODITIES PROGRAMME



ACP GROUP OF STATES

GRENADA

AGRICULTURAL RISK MANAGEMENT FIELD MISSION July 13, 17, 2009

SUMMARY OF FINDINGS

I. Introduction

At the request of the Government of Grenada, the World Bank undertook a brief mission to Grenada in order to explore the possible needs and scope of a program of technical assistance pertaining to agricultural risk management. This short report summarizes the main findings from this mission and can be used as a basis for further discussions with the Ministry of Finance (MOF), the Ministry of Agriculture (MOA) and other stakeholders in the agriculture sector (private and public) regarding follow up measures which may involve the World Bank and/or other development partners. This note takes stock of the major risks facing Grenadian agriculture, comments on current capacities to manage those risks, and identifies some apparent vulnerabilities of the sector. This summary note will be discussed with Grenada's newly-formed Agricultural Disaster Response Committee (ADRC).

This non-lending technical assistance effort falls under the umbrella of the World Bank's "Market Based Agriculture Risk Management in the Caribbean" initiative, finance in part by the European Union's All-ACP Agricultural Commodities Program.

II. Grenadian Agriculture--Background

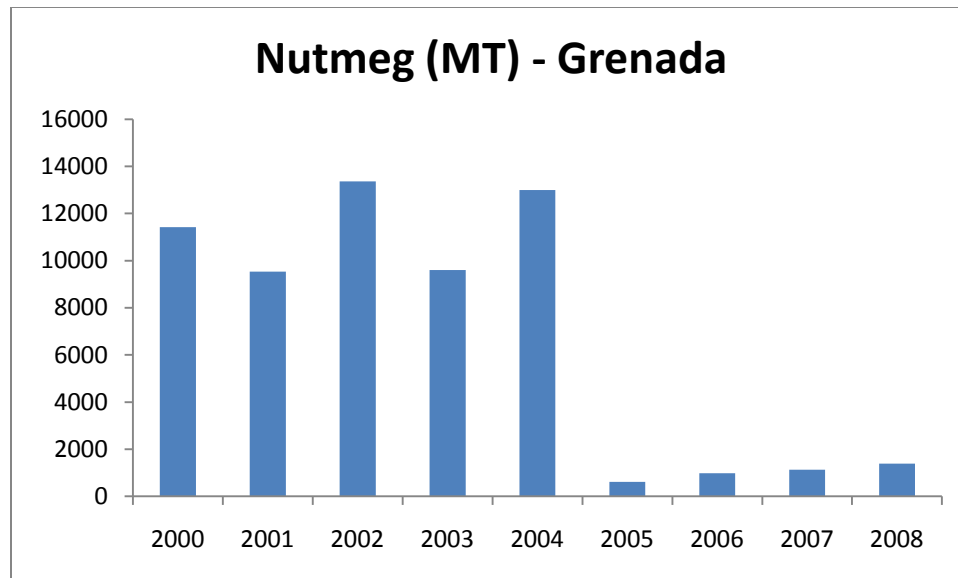
Grenada is a small open economy, with a population of 110,000 inhabitants and a per capita income of US\$5,480. Its economy is based upon tourism, financial and educational services, remittances, and agriculture. Over the past decade, economic growth has averaged 3.8 percent per annum. While the proportion of the population facing chronic poverty fell from 13 to 2.4 percent, the share of inhabitants falling under the poverty line actually increased from 32 to 38 percent.

The current structure of Grenadian agriculture is unclear due to limitations of available data and the massive dislocations following Hurricane Ivan in 2004 and Emily in 2005. The last agricultural census, undertaken in 1995, recorded some 13,000 farmers. Following the hurricanes, many farms were abandoned or not rehabilitated. This, together with the advanced age of most Grenadian farmers (thought to average more than 60 years old), has resulted in a situation where there are now only about 5,000 active farmers. The large majority of farmers have less than 5 acres of land and perhaps no more than 300 to 500 farmers have holdings larger than 10 acres. Formal sector employment in agriculture is likely to be 2000 to 3000. There are some 700 registered fishing boats and many times that number of people who are active fishers. Some 256 entities are registered as agro-processors, the vast majority of which are micro or small-scale enterprises. There are comparatively few larger, fully commercial agro-processing enterprises.

Historically, Grenada was best known as a supplier of spices, most especially nutmeg and mace. Prior to Hurricane Ivan, Grenada accounted for some 20 percent of world nutmeg exports, with Indonesia accounting for most of the remainder. Many nutmeg farmers also grew cocoa as well as a range of root and tuber crops for food consumption and sale. Other spices are also cultivated, including cinnamon, pimento, cloves, and others. Some 27 spices and herbs are grown on the island. Livestock production, especially of chickens, goats and pigs is widespread, although most of this occurs on a very small, backyard scale. Many different types of fruits and vegetables are grown, a small proportion of which under irrigation. Most of this is for domestic consumption (including tourism) although some products are exported within the region. Very little area is planted with cereals and Grenada imports more than 90 percent of its cereals requirements (e.g. rice; wheat flour, and inputs for animal feeds).

Until recently, accurate statistics were only available in relation to the number of growers and the production of nutmeg and cocoa (supplying the Grenada Nutmeg Cooperative Association and the Grenada Cocoa Association, respectively). Farmers supplying (fruits and vegetables) to the Marketing and National Importing Board were also registered as were members of the Minor Spices Association. Production patterns and outputs of livestock products and of staple root and tuber crops were *guestimated*. The Ministry of Agriculture has begun to set up a Farmer Registry (as well as a Fisherman Registry) which can be used for statistical and other purposes. An EU funded study outlines the broader needs in strengthening agricultural records and statistics in Grenada.

Hurricanes Ivan and Emily had a devastating impact on Grenadian agriculture. Ninety percent of nutmeg trees were either destroyed or damaged, virtually all banana trees were knocked down, a majority of cocoa and fruit trees were damaged, arable crop lands were flooded, and significant damage to boats occurred. The recovery process has been long and difficult. Even after replanting efforts, nutmeg and many other tree crops take many years before yielding a harvest. Grenada's nutmeg production in 2008 was still only 1.39 million lbs., approximately one-tenth its average output over the 2002 to 2004 period. National cocoa production averaged 1.75 million lbs in the early 2000s, yet was only 0.48 million lbs in 2007. Only about 10% of the registered nutmeg and cocoa growers from the early 2000s are still making deliveries to the respective marketing organizations.



source: Grenada Coco and Nutmeg Association (GCNA, 2009).

Grenada’s current government is giving more attention to agriculture than did its predecessors. A September 2008 National Stakeholders Consultation and Strategic Planning Retreat brought together a large number of stakeholders and identified a range of initiatives for short-term and longer-term application. Many problems and opportunities were identified. Major policy objectives for the sector have been identified and relate to: (i) food security, (ii) agro-processing/value-addition, (iii) replanting/rehabilitation of tree crops, and (iv) environmental management.

The 2008 international commodity price spike and some difficulties in procuring rice have amplified food security concerns in Grenada as they have elsewhere. Even though Grenada is a significant importer of food, last year’s price spikes had only a modest impact on consumer expenditures and overall inflation. The reason is that the core of the Grenadian diet remains with root and tuber crops, plantains as well as fish. These are readily available and local prices are little affected by international prices. Grenada is a substantial importer of poultry products (although it is self-sufficient in eggs) as well as dairy products. Some scope exists for import substitution for poultry, although if this were to take place through ‘back-yard’ operations, this could pose serious food safety risks. Dairy products will continue to be imported as will most of the processed foods that are brought in. Domestic consumption (including tourism) is too small to support many food processing ventures. Arguably, Grenada’s more significant food security threats stem from theft (of crops in the grown) and post-harvest attacks by rodents. Both of those risks can be managed through public sector supported programs and policies.

The recovery and growth of traditional export industries is constrained by many factors, including the advanced age of many growers, the lack of interest or incentives of younger people to go into agriculture, the high costs of labor (for land clearing and planting---although this is currently being subsidized by government), the lack of sufficient planting material (although much progress has recently been made on this), certain tree disease issues, and, probably, a high level of uncertainty about the future of the industries and the possibility of future extreme weather events. Nutmeg takes upward of seven years to yield a crop. A large number of former growers have not replanted since Ivan and in all likelihood, the

many of them will not replant unless clear incentives and risk management tools are in place to avoid future income losses. Under the current trend, will other growers make up the difference or will others be attracted to invest in spice and cocoa production in Grenada? Even if the industries cannot revert back to their former size, profitable opportunities remain both in mainstream and niche markets as long as high quality is maintained and the growers and exporters meet the other requirements of discerning buyers.

III. Preliminary Risk Assessment

There are a number of risks and constraints that are associated with the agricultural sector as a whole. These include the following:

3.1 Weather Risks

- The most prominent and common weather risk is tropical storms involving heavy wind and rain. These result in wind damage (to trees, especially bananas) and damage to other crops through flash flooding.
- Nearby tropical storms or even distant hurricanes cause huge sea swells putting Grenadian fishing boats (and fishers) at risk
- Parts of the country, including the northeast region and the island of Carriacou, experience drought or prolonged dry spells adversely affecting the yields of crops that are not grown under irrigation
- Grenada lays outside of the traditional path of Caribbean Sea hurricanes. Prior to recent years, the last time that a hurricane hit the island was 1955. However, Grenada was hit by category 3 Hurricane Ivan in 2004 and then by category 2 Hurricane Emily in 2005. As noted above, enormous damage was recorded in the agricultural sector as well as in the broader infrastructure of the country. Recovery was slowed by the lack of planting material and germ plasm and the huge effort and cost required to clear land and replant. The debris created by felled trees has created fire risks, especially during the dry season.

Capacity to manage

- The lush vegetation in the interior of the island provides some natural protection against storms, although very heavy winds may knock down all which lies in their path. Some farmers purposely plant wind breaks, although some of these take many years to mature. Limited use seems to be made of fast growing bamboo or eucalyptus trees as wind breaks.
- Diversified cropping patterns are a good hedge against weather risks as different tree and ground crops have varied vulnerability to weather events.
- Most farm, food storage, and agro-processing buildings are constructed to withstand relatively mild storms but not weather events involving severe winds.
- No organized system is in place for the storage of germ plasm and root/tuber seeds for fast recovery and planting after a major storm.

- Currently, no weather-related insurance is being applied. In the past, some banana growers were insured under the Wincrop program. Insurance premiums are said to be too high for fishermen to insure their assets (boats) or income.
- Investment in irrigation facilities has now covered 800 acres, including in some of the areas experiencing drought risks.
- Communication equipment is being facilitated to fishing boats for hurricanes and tropical storm alerts.
- There is apparent interest from various parties to explore further the opportunities for insurance. There is reported to be good and accessible information for drawing weather risk maps in agriculture (see, for example, www.cariwin.gd). MOA manages multiple weather stations, 3 are automatic and 64 are manual. Local insurers may require some capacity building in contract design, monitoring, and links with the re-insurance market. They would welcome the possibility to bundle weather insurance with other type of insurance (i.e. life, agriculture assets, etc.) as needed. In all likelihood, insurance would need to be applied on a pool basis rather than for individual farmers, with the involvement of a marketing association, financial intermediary, etc.

3.2 Sanitary and Phytosanitary Risks

- Various pests and diseases have been introduced into Grenada over the years, with some having devastating consequences (e.g. moko disease and black sigatoka in bananas), others adversely affecting staple food yields (pink mealybug, sweet potato whitefly), and still others restricting Grenada's ability to export certain crops (e.g. mango seed weevil and various types of fruit flies). Rabies is now endemic in the island, although most other animal diseases have been effectively controlled.
- SPS risks are posed by the trade in plants, food products, animals, by the movement of people, and even by the movement of heavy winds. The importation of exotic plants for resorts may inadvertently carry new pest and diseases. Tourists disembarking from cruise ships may carry pests in their clothes. As they disperse on the island through agro-tourism they have transfer hazards on their clothes or shoes. Ship garbage may also carry with it harmful pests. Containers used for shipping goods may contain pests.
- In relation to nutmeg, problems with aflatoxin (and thus end market rejection) were previously experienced. Currently, a wilt disease, of uncertain origin, is killing a small proportion of the remaining trees. The seriousness of this threat is uncertain.
- Disposal of dead animals after natural disasters (i.e hurricanes, floods) might pose some risks to human population by contamination of water. This activity needs to be included in the natural disaster post-coping activities. Coordination is needed among different health agencies.
- Rats have become a serious problem in recent years. Some attribute their proliferation to the aftermath of Ivan. Yet, slack disposal practices have undoubtedly compounded the problem, posing risks to human and animal health and generating food crop losses.
- Active surveillance to avoiding re-occurrences of pests and diseases already present in the country needs to be a constant activity. (i.e. various types of fruit fly, black sigatoka, moko, mealy bugs,

burrowing nematode, citrus aphid, mango seed weevil, pineapple meal bug, etc., etc.). The proliferation of these type of diseases has proven costly to agriculture in the past.

- Active surveillance at entry points to avoid entrance of new pests and diseases is also a needed constant activity. (i.e. Mexican fruit fly, sapodilla fruit fly, south American fruit fly, African snail, carambola fruit fly, bacterial blight, seed weevil, monila pod, canker, lethal yellowing papaya meal bug, sweet potato borer/weevil, etc., etc.).
- Tourism is an increasing high risk factor, particularly if agriculture diversifies in agro-tourism. Also, invasive species brought by tourism as decorative plants are a risk (i.e. water lilies – can take over the water ways, Indian red mangoes, piranhas, iguanas, etc.).
- Mechanical risk of disease by containers that transport the inputs for animal feed from Brazil, Canada, USA. Tires and used tires are also a risk.
- Overcooking the food is not a guarantee for protecting human health from contaminated food stuff. There have been no major issues with food risks so far, but the country cannot lower safety standards. Example, too many poultry small producers with no standards produce for the domestic market. There are recorded cases of restrictions to export to USA market due to phytosanitary causes (i.e. pests in mangoes, aflatoxin in nutmeg). Mangoes can be treated with radiation but there are no facilities in Grenada. The MOA is researching on hot water treatment. Aflatoxin in nutmeg can be reduced by keeping the humidity at low levels in the packaging.

Capacity to manage

- Grenada is not a member of either the OIE or the IPPC, although it is allowed observer status and access to training programs.
- Grenada does not import live animals, except goats from USA and livestock semen.
- Only certified seed is allowed to be imported.
- The country maintains absolute restrictions of product entry from specific countries. For example, white potatoes and onions must be certified and imported only from the USA that are certified. Citrus imports are restricted from countries having fruit fly.
- Active pest and disease surveillance programs are in place for certain risks, including for banana pests/diseases, rodent control, and fruit flies.
- Cruise ship boat stores and garbage are inspected before any garbage is unloaded or cruise passengers disembark.
- Periodically, emergency response funds have been included in the national budget.
- The MOA maintains a small but professional staff of plant and animal health specialists. For example, the Ministry has 8 plant quarantine specialists, six officers for pest surveillance, two veterinarians, and eight additional staff focusing on animal health matters. The Ministry maintains a MOU with St. George University for animal health screening services.
- Pesticides are governed by the Pesticide Act, but its use is very low, since there is a drive towards integrated pest management or bio-control.
- There exists a MOU between the Bureau of Standards and the Ministry of Agriculture to enforce food standards for domestic consumption.

- Exportation of Food Act (1998) lays down 23 standards for food products. The majority of these are voluntary, although some are mandatory.
- The Bureau of Standards is currently launching a program to promote ‘good agricultural practices’.
- The Bureau of Standards and the Ministry of Health certify restaurants and have been implementing a program to certify hotels.
- The demand for testing is growing beyond the capacity of the Bureau of Standards.

3.3 Price Risks

- The incidence and severity of price risks are modest in Grenada compared with weather-related risks and those pertaining to SPS matters. Pertinent price risks would apply to cereal and animal feed ingredient imports, any very sharp spikes in international prices for dairy and poultry products (heavily imported into Grenada), and possible adverse movements in nutmeg, other spice, or cocoa prices as a result of competition or declines in demand. Relatively little emphasis was placed on price risks by the stakeholders consulted during the mission.
- Grenada’s leading provider of animal feed and wheat flour is a subsidiary of a multinational food and cereals company which endeavors to manage price risks at its headquarters, although the effectiveness of such measures certainly affect the profitability of the local subsidiary.
- World nutmeg prices due vary from year to year, although higher grade nutmegs and mace experience less price volatility than many other spices. For example, between 2001 and 2007, the prices realized by the GCNA for highest grade nutmeg remained within the range of EC\$750 to 820 per 100 lbs. As the industry recovers there may be opportunities to explore various types of contracting arrangements to further manage price risks and/or obtain premium prices for quality and other characteristics.
- Cocoa produced in Grenada is exported at a high premium based on “fine or flavor” characteristics. There is no world market for such cocoa, and producers are not subject to high volatility as it occurs with the international cocoa price. However, competition might intensify as some countries are moving to “fine or flavor” cocoas (i.e. Dominican Republic, Trinidad).
- The MNIB is moving toward contracting for fruit and vegetable supplies, both for the domestic market and for exports within the region and beyond. There may be scope to consider various contracting measures to provide more secure prices (and incentives) for growers to expand output and sell through regular market channels.

3.4 Credit Risks

- The banking system has remained resilient after hurricane Ivan and the financial crisis, though the growth of credit to the private sector slowed to 9.3 percent at end-February 2009, reflecting weaker economic activity. The ratio of non-performing loans (NLPs) to total loans remained low at 3.5 percent at the end of 2008.
- Tree crops take a long time to reach full production. This is an issue for farmers after hurricanes, or for expanding production lacking medium-term financing.

- Past experiences with public sector agriculture credit has led to a culture of non-repayment of loans. Formal financial institutions in Grenada still perceive the agriculture sector as riskier than other sectors.
- Lack of capacity of farmers to prepare loan applications and business plans. Most banks have between 1 to 10% of the portfolio in the agriculture sector, and are very much interested in evaluating agriculture investments, but perceive a lack of technical capacity (financial literacy) to present investment opportunities from farmers.
- Agriculture credit opportunities increases when dealing with farmer associations (like GCNA or MNIB) or when dealing with value added investments (vertical integration of the supply chain), reducing farm-level risks and increasing the opportunities for higher profit margins.
- All 5 Commercial Banks plus the Grenada Development Bank (GDB) have agriculture lending, but the none of them, nor the Banking Association, has special programs or training on agriculture lending or risk assessment.

Capacity to manage

- The economy enjoys exchange rate stability by membership of Eastern Caribbean Currency Union with a common Central Bank and currency.
- Commercial Banks are entering into partnership with producer associations, like the MNIB, to mainstream lending for farmers with established sales contract. In order to reduce marketing risks for agriculture credit, some Commercial Banks are using purchase orders from buyers (like MNIB) as collateral to extend credit to farmers. This new project finance structure is being tested.
- Commercial Banks require proof of “back-up income” to farmers in order to extend credit. This forces farmers to diversify in order to manage the agriculture investment risks.
- GDB uses donor and public sector funding to on-lend to the sector at affordable interest rates and sector-specific terms. In order to reduce credit costs and risks, GDB is solely financed by public sector and donor credit lines, but even then, their agriculture portfolio is only 7% of the overall portfolio.

IV. Vulnerability

Based on the information that was gathered about risks and the capacity to manage those risks, it is possible to identify and characterize potential vulnerabilities of the sector—taking into consideration the likelihood and potential severity of (financial and other) losses.

In the table below the areas of highest vulnerability are represented by the boxes shaded darkest (upper left corner), and the areas of lower vulnerability are shown in the boxes with the clearer shades (toward the right side of the table). Even though the analysis is more qualitative than quantitative, the results can serve as the basis for identifying priority areas for strengthening risk management practices.

Vulnerability to Risky Events Based on Expected Loss + Capacity to Manage Risk

	Capacity to Manage Risk				
Expected losses	1	2	3	4	5
High	Hurricane damage in nutmeg	Hurricane damage in bananas		Losing planting material and germplasm in major storms	
Medium	Hurricane damage in cocoa	Extended dry period damaging rainfed crops Fishing boats/assets due to storms	Introduction of contagious animal diseases Entry of pests or diseases through tourist movements and ships	Entry of new pests or diseases through trade in goods	
Low	Hurricane damage in minor spices	Common storm damage to food crop production Common storm damage to export crops Volatility in nutmeg and minor spice prices	Rodent attacks on food and animals Volatility of cocoa prices Volatility in international food/cereals/dairy prices	Disposal of dead animals following storm	

Public Policies and Programs for Agriculture Risk Management

The MOF and the MOA have several policy instruments in place for managing agriculture risks in Grenada. The catastrophic risks faced by agriculture (mainly SPS, weather and price risks) are managed quite differently across the island. SPS risks have a permanent risk management structure lead by the MOA with an emphasis on “prevention” of diseases and pests entering the country in the first place. This ex-ante focus is complimented by a monitoring and response system which makes Grenada prepared to face exogenous risks. Although work remains to be done in the SPS area, vulnerability is relatively low with respect to the situation of other countries in the region.

However, the same cannot be said for weather risks. The MOA has put in place ex-ante programs for management of weather risks by investing in irrigation infrastructure in drought-prone areas, but public sector policies and programs for management of wind and excess rainfall remain ad-hoc ex-post programs as evidenced in the public sector budget. Projects like the Agriculture Recovery Program and Rural Road Rehabilitation project accounted for 16 to 28% of the MOAs budget (2007-2008). Therefore, the amount of resources dedicated to respond to disasters in the agriculture sector is non-negligible. However, aside

from the hedging of public sector assets (through CCRIF) against major hurricanes, the public sector has no ex-ante mechanisms to support small vulnerable farmers against such systemic events. This lack of clarity of ex-post public sector interventions in the sector, creates ambiguity to farmers, reducing the incentives for investments in the sector and the demand for private sector instruments (such as agriculture insurance).

Nevertheless, the MOA has recognized the importance of moving towards a more targeted, transparent and ex-ante system for dealing with catastrophic events in the sector, and has taken to main actions:

1. The creation of the Agriculture Disaster Response Committee to establish a national policy and plan to deal with systemic risk in the sector.
2. The establishment of a national farmer/fishermen registry to better target, supervise, monitor and evaluate farmer support programs and policies.

Next Steps

1. Price Risk

- a. Technical Assistance in the form of targeted training for the private sector on hedging output and input price risks for locally produced agriculture commodities; as well as for import food products. **[Workshop in Grenada to train farmer associations, financial institutions, and public sector on price hedging instruments]**

2. Weather Risk

- a. Series of Videoconferences with the private sector to present case studies and concepts on financial instruments for hedging agriculture weather risks (insurance for named perils). These videoconferences may lead to pilot projects. **[Proposed individual videoconferences with GCNA, MNIB, Insurance Association, and Banking Association].**
- b. An additional Videoconference with the ADRC to present a specific proposal on a new public sector program for dealing with catastrophic weather events. The objective of this exercise would be to (in the context of the Agriculture Disaster Risk Reduction Policy and Plan in preparation) advance a proposed ex-ante public sector mechanism to support farmers/fishermen after a disaster. This would require detailed public sector expenditure information (since 2003) and preliminary discussions with MOA and MOF. After this initial proposal, and if agreed upon, the Bank could continue the technical assistance for supporting ADRC in its implementation. **[Proposed individual videoconference with ADRC to present a detailed public sector weather risk management program for agriculture (including fisheries)]**

3. Review of the Agriculture Disaster Risk Reduction Policy and Plan for 2009

- a. Help the ADRC in reviewing and advising on the proposed Policy and Plan on agriculture disaster risk reduction through expert assessment and consultations. **[Videoconferences and document review by demand of ADRC by different World Bank experts in SPS, fisheries, weather, price, credit risks]**

- b. Support to ADRC in organizing a national or regional event to present the Policy and Plan for feedback of different stakeholders of the sector. **[Workshop for presenting and discussing the 2009 Agriculture Disaster Risk Reduction Policy and Plan]**

4. Other Donor Support

- a. Support the ADRC in linking with other donors for technical assistance and/or financing to address other agriculture sector risks not covered by the Technical Assistance of the World Bank (in particular SPS risks).