

Chapter 33

The Caribbean's Response to Climate Change Impacts

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ABSTRACT

To fully appreciate climate change impacts and adaptations in the Caribbean, several aspects of the phenomenon and the region's response must be placed in historical and chronological sequence. This chapter starts with a review of the Caribbean islands, focusing on the agricultural sector and its vulnerability to climate change impacts. It then provides a brief review of the Caribbean's foray into organized planning for climate change; the early advocacy of those who believed the issue was a serious threat to the region, and the projects that were developed. It also traces organized institutional level responses, some national efforts, and the degree to which climate change issues have now become part of the routine agricultural development discourse. An overview of the possible climate change impacts and the programmed adaptations at a regional level are presented, and the chapter ends with a look at the importance of communication to raise awareness and ultimately change behaviours.

INTRODUCTION

Agriculture is an important sector of the economy in most Caribbean countries. In addition to providing food for local consumption, the crops, livestock and seafood that are grown, raised and caught in the Caribbean contribute to valuable foreign exchange. The region is a net importer of food. At the same time, regional agriculture and fisheries are highly dependent on specific climate conditions. Thus, the overall effect of climate change on the region's food supply can have serious consequences for regional food security. Acceptance of climate change as an issue of regional agricultural significance thus required purposeful analysis and a readiness to take appropriate actions. Recognition involved a realization that the likely impacts would be economy-wide and not limited to any one sector or academic discipline.

Between 1980 and 2004, there were several instances of extreme weather events as shown in Table 1.

The effects of climate change also needed to be considered along with other evolving factors that affect agricultural production, such as changes in farming practices, terms of trade and technology. Increases

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Table 1. Value and incidence of selected hurricane damage to the Caribbean agricultural sector (1980-2004)

Country Hurricane (Year)	Sub-Sector	Damage Description	Estimated Value (US\$)
Anguilla Luis (1995)	Agriculture, livestock, fisheries		US\$ 2,978,997.02
Bahamas Lili (1996)	Agriculture	Extensive damage to 28 acres of bananas, limes, mangoes and coconuts in Exuma and severe damage to banana in Long Island	No value reported
British Virgin Islands Hugo (1989)	Farmers and backyard gardeners	Crops, livestock, buildings, roads and dams, fisheries, agricultural station	US\$ 4,496,795.50
Dominica Luis and Marilyn (1995)	Crops, livestock, bananas, forestry	90% banana acreage and 50% tree crop production destroyed	US\$ 11,851,840.00
Grenada Ivan (2004)	Agriculture	Nutmeg, mace, cocoa	US\$ 35,925,890.00
Jamaica Gilbert (1988)	Agriculture	Sugarcane 30,000 ac, and 157,000 ac other crops destroyed	US\$ 15,187,161.27
St. Kitts and Nevis Luis (1995)	Agriculture	Wind damage to crops, soil erosion, sugar cane crop and infrastructure loss	US\$ 34,999,965.00
St. Lucia Allen (1980)	Housing, agriculture and industrial sector		US\$ 74,074,000.00
St. Lucia Debbie	Agriculture	Flood, wind and erosion damage to banana and coconut crops	Short and medium term losses to banana industry estimated at US\$ 740,740 per week

Source: Adapted from CDEMA (2010).

in temperature and carbon dioxide (CO₂) can be beneficial for some crops in some places, but to realize these benefits, nutrient levels, soil moisture, water availability and other conditions must also be met. Temperature rise leads to changes in soil moisture status, lower crop productivity and a greater incidence of agricultural pests and diseases. These factors will be particularly severe in islands like Antigua and Barbuda which are water deficit. The accompanying heat stress will lower livestock productivity and decrease the carrying capacity of open pasture.

According to Gumbs (1997), changes in the frequency and severity of droughts, floods and other extreme events could pose challenges for farmers and ranchers. Soil erosion will be exacerbated, especially in the mountainous islands of St Vincent, Grenada and Dominica. Loss of fertile topsoil is also a problem in St Lucia where many of the soils of the interior washed away by the smallest of rivulets after heavy rains. In areas of allophanic clay soils slumping and gullyng are problematic. There can be serious flash flooding in the plains following erosion episodes triggered by heavy rains on the shale soils of Jamaica (as present in Christiana and Yallahs).

Drought is a major hazard faced by Caribbean farmers and the damages are similar to those caused by floods with respect to livelihoods and rural economies. Droughts lead to other problems like fires, wind erosion, pasture degradation and reduced livestock productivity. The loss of soil integrity due to flooding, leaching, ionic and agri-chemical concentration and denudation by fire all have consequences for inshore fisheries. Meanwhile, warmer water temperatures are likely to cause the habitat ranges of many fish and shellfish species to shift, which could disrupt ecosystems of commercial interest. Overall,

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