

long-term change in climate. This knowledge (often called 'traditional knowledge') and monitoring of conditions can be very valuable to researchers and policy makers as they seek to develop new strategies to adapt to the changing climate.

Networking with agricultural advisors and researchers can also be valuable in helping you to identify the crops, crop varieties or approaches that are best adapted to the new conditions. Other parts of the world may have farmed for years in conditions similar to those we are experiencing now and can expect in future, so research institutes in different regions have started to exchange information and planting materials.

And the news is not all bad! Agriculture is one of the few economic sectors in the Caribbean that has the potential to adapt in ways that could result in a **win-win-win scenario**. Conserving, sharing and using crop diversity could improve productivity, food and nutrition security; conserve biodiversity; and increase resilience to climate change (see CARDI Factsheet What Farmers Can Do to Combat Climate Change: Crop Diversity Conservation, Sharing and Utilisation).

Living with uncertainty

There is still a high degree of uncertainty about the extent of the changes we can expect in the Caribbean and when. So it is important for farmers to take a precautionary approach and adopt strategies, such as increased crop diversity, that can minimise risk. Your vigilance, knowledge, experience and adaptability will be critical assets in securing your own future in the face of climate change – and the food and nutrition security of the region as a whole.

References

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PSC# JA/001/11



This document has been produced with the financial assistance of CTA.
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FACTSHEET



CLIMATE CHANGE AND AGRICULTURE

What Farmers Need to Know about Climate Change and Agriculture



What is climate change?

For the past 150 years, advances in technology have made farming easier and more productive and our lives generally more comfortable. But industrialisation has also dramatically affected the climate worldwide, mainly because we have:

- released into the atmosphere more of the gases ('greenhouse gases') that keep the Earth warm; and
- cut down trees and forests that help to remove these gases from the air.

The result is what is often called 'global warming', the main driver of 'climate change', which is now affecting people's lives and livelihoods all over the world.

The difference between weather and climate

Weather is what the forecasters tell us about on a day-to-day basis, such as how hot it will be, whether it will rain or we should expect a storm or hurricane. Weather varies across the world – when it is sunny and dry in the Caribbean in January, it may well be cold, snowy and grey in the United States or Europe.

Climate is the average weather in a particular place over many years. While weather can change in a few hours, the climate has usually taken hundreds, thousands or even millions of years to change significantly. However, when people talk about climate change now, they are almost always referring to the faster pace of climate change that is happening as a result of human activity.

How climate change is affecting the Caribbean

The Caribbean is already experiencing trends that scientists attribute to climate change:

- higher temperatures on land and in the sea, with hotter days and nights;
- changing rainfall patterns, with longer dry seasons, shorter rainy seasons and increased frequency of intense rain;
- rising sea levels; and
- increased intensity of the strongest hurricanes¹.

The impact of climate change on Caribbean farmers

Farmers have also already started to feel the impacts of climate change on their productivity, including:

- loss of crops and soil erosion as a result of increased flooding;
- reduction in crop yields as a result of higher temperatures;
- crop vulnerability to new pests and diseases as a result of higher temperatures;



CARDI Weather Station used to collect climatic data as part of climate change monitoring in Guyana

- loss of fertile soils in coastal areas because salt water has seeped into the ground water and rivers as a result of sea level rise; and
- loss of crops as a result of tropical storms and hurricanes.

Climate change will also accelerate the loss of crop diversity and particularly crop wild relatives (wild plant species that are genetically related to cultivated crops).

Why it is important to act and to act now

Even if worldwide action were taken now to reduce greenhouse gas emissions, current climate trends would continue for many decades and probably centuries. Since the Caribbean is already vulnerable in terms of food and nutrition security and livelihoods, the need to act is urgent.

There are two main types of action that can be taken in the face of climate change:

- **mitigation** to slow down the build up of greenhouse gases and remove them from the atmosphere (e.g. developing electric or hybrid cars, using solar and wind power to generate electricity, planting trees to absorb greenhouse gases);

Examples of the impacts of climate change on agricultural productivity in the Caribbean

- Coffee farmers in Jamaica's Blue Mountains report that warmer temperatures are reducing their crop yields².
- Cool nights during the sugar cane harvesting season result in better quality juice; warmer nights could lead to a decrease in the amounts of sugar produced from each tonne of cane harvestedⁱⁱ.
- Average annual yields in CARICOM countries for three key crops (irrigated and rainfed rice; rainfed maize; and rainfed cowpea) could be reduced by 3% to over 8% as a result of climate change; if this effect on yields applied to all crops, it is estimated that agricultural value in the CARICOM countries would fall by between US \$85 million per year and \$243 million per year³.
- An estimated 3% of all agricultural land in the Caribbean could be lost as a result of a two-metre rise in sea level, with Suriname losing as much as 9%ⁱⁱⁱ.
- In 2010, Hurricane Tomas cost the agriculture sector in Saint Vincent and the Grenadines US\$24 million; in Saint Lucia the tally was US\$56 million⁴.

adaptation: practical steps to protect countries and communities from the likely disruption and damage that will result from the effects of climate change and, where possible, to take advantage of its consequences⁵.

Farmers can play a critical role in climate change adaptation and mitigation

As a farmer, you are probably used to adapting to small changes in weather patterns from year to year, for example by planting earlier or later or selecting different crop varieties. Farmers are also among the first to notice more persistent trends that may signal a



Sweet potato varieties being evaluated for climate change resilience.