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Improving the Policy Framework for Developing Climate Change Resilient Agriculture Systems: The Role of Plant Genetic Resources

CWA 2012

Policy Options for Managing Regional Crop Diversity Under a Changing Climate

The Caribbean is on the frontline of climate change vulnerability; all of the region's productive sectors have to come to terms with what this means for them and devise strategies and actions to meet new challenges and build resilience. The agricultural sector is no exception. The sector's importance to Caribbean countries goes beyond its counted contribution to GDP: Agriculture directly feeds and clothes thousands of farm families and the bulk of the region's people. It has forward and backward linkages to other productive sectors; it supports food security; is important to the rural economy and promotes social stability; and has the potential to contribute to environmental protection. This means much is at stake if the region's governments and people do not take measures to ensure that the sector can survive and even thrive in the face of a changing climate. The management of regional crop diversity and plant genetic resources presents a unique opportunity to build adaptive capacity and resilience within the sector. But the time for action is now. While there will be a price tag for "doing," the cost of "not doing" will be exponentially higher in the long run. The Implementation Plan (Implementing the CARICOM Regional Framework for Achieving Development Resilient to Climate Change) developed by the 5Cs and adopted by the CARICOM Heads of Government in March, 2012 estimates that climate change inaction will result in annual losses of up to 30.5% in GDP to Caribbean islands between now and 2025.

Climate trends and consequences for the agricultural sector

Current climate trends are already having negative effects on the agricultural sector and with the predicted intensification of climate change these are expected to get worse. Higher temperatures and lower precipitation are leading to reduced crop productivity. More intense hurricanes and the increase in extreme weather events such as flooding and drought are leading to dramatic crop losses. In February, 2010, the Guyana Government spent US\$1.3

million in relief to affected farmers of Region 2. This included planting materials, fertilizers for cash crop and portable water tanks. An additional US\$16,000 was spent to secure water for farmers in Region 5, a predominantly agricultural area. Dominica was also affected, with banana production declining by 43% from the previous year and in St. Vincent and the Grenadines, agricultural production was 20% lower than average. Droughts are also shortening growing seasons and reducing yields. Changes in temperature and precipitation profiles are shifting the range of many insects and creating conditions for the emergence of new combinations of pests and diseases that threaten productivity and crop yields. Increased salinity due to salt water intrusion from sea level rise threatens fresh water resources and irrigation supplies. What is more, climate change impacts such as landslide, flooding and salt water intrusion could reduce land suitable for growing crops.

The problem of climate change impacts on agriculture is not unique to the Caribbean. Globally, climate change is leading to higher food prices and greater food insecurity. The OECD and FAO project that between 2010 and 2019 average wheat and coarse grain prices will be nearly 15-40% higher in real terms relative to 1997-2006, while for vegetable oils real prices are expected to be more than 40% higher.¹

Plant genetic resources as a response to climate change, an important element of option-rich agriculture

- ***Plant genetic resources are a critical component of agricultural sustainability***
Adaptation and resilience through crop diversity and plant genetic resources is an important strategy towards climate smart agriculture and agricultural sustainability. While it is not the only strategy towards achieving climate smart agriculture, its unique contribution lies in its ability to directly support climate adaptation without significant input costs. A broad genetic base reduces vulnerability to pests and disease. Changing climate conditions require research and development into new varieties of plants and crops that can withstand pests, diseases and environmental stresses. Scientists need access to genetic diversity to support such research.
- ***Plant genetic resources can support food security***
Food security is threatened by climate change and climate variability; the introduction and promotion of varieties that are resistant to projected stresses will play an important role in consolidating and guaranteeing food security.
- ***Plant genetic resources support other strategies to which CARICOM governments have committed themselves***
Plant genetic resources for food is a critical element of the strategy of several CARICOM countries, where there are plans to replace up to 25% of imported cereal grains with

¹ OECD-FAO Agricultural Outlook 2010 - 2019

non-traditional staples. It also supports the overarching Caribbean Food and Nutrition Policy through the potential for integrating more nutritious and varied foods into the Caribbean diet. The latter is especially critical in the face of the growing epidemic of nutrition-related non communicable diseases (NCDs)

The Context

Key constraints and challenges to maximising the benefits of plant genetic resources for climate smart agriculture and increased resilience include the following:

- ***Lack of organised inventories of plant genetic material*** – Most Caribbean countries have limited databases of important crop varieties and more so any non-domesticated varieties. In the absence of proper inventories, no assessment of its value can be assured nor can this potential resource be exploited.
- ***Difficulties in trans-Caribbean movement of plant genetic resources*** – In the absence of harmonised plant protection and phytosanitary regulations, the movement of plant genetic resources from areas where they are endemic or widespread to those where they are needed is less than optimal.
- ***Limited adaptive research involving a wide range of plant types*** – Given the narrow range of crop types available to Caribbean researchers, especially at the national level, there is limited scope for the exploitation of possible landraces with the required qualities to build resilience.
- ***Underutilised protocols for international movement of germplasm*** – Not all countries have entered into international agreements specifically designed to share germplasm as part of a more resilient agriculture. In some instances where countries have signed and ratified these treaties, the required capacity for implementation is lacking.

Recommendations

Know what we have and look after it:

1. Establish strong national systems to take stock of and safeguard our region's existing rich diversity of plant genetic resources for food and non food crops, which underpin our agricultural sector.
 - a. Conduct national biodiversity assessments to take stock of national PGR for food and agriculture
 - b. Prioritise national support for the revitalisation of Caribbean Plant Genetic Resources Network (CAPGERNet) including the active participation of key national institutions and stakeholders at national level in the work of the regional network to support

- regional networking and coordination for appropriate management of PGR in the Caribbean.
- c. Harmonize National **legislation** and **regulations** in line with international agreements such as the IPGRFA through regional guidelines for conservation use, access and benefit sharing of PGRFA.
 - d. Support the development/strengthening of National PGR programmes including institutional and human resources development.
 - e. Educate the public at large on the conservation, use and cultural significance of PGR
 - f. Recognize the global responsibility to humanity to safeguard the region's unique germplasm
 - g. Assign a PGRFA focal point in the Ministries of Agriculture

More genetic material means more robust and resilient national and international systems:

2. Promote mechanisms to share germplasm regionally and internationally in order improve the robustness and resilience of each country's systems and support other national and regional strategies.
 - a. Establish a Regional Transit Centre for the safe transfer and certification of planting material
 - b. Develop Institutional mechanisms to support sharing of PGR, globally and regionally. This will involve PGR as well as developed varieties.
 - c. Harmonise the multilateral system in the region for PGR and variety sharing
 - d. Develop and establish a seed policy
 - e. Promote farmer participatory breeding approaches