Climate Smart Agriculture
in the Eastern Caribbean States

The Model 4-H Agricultural Project as a Training and Demonstration Centre for Young 4-H Clubites to Gain Practical Experience in Sustainable Agriculture and Contribute to the Conservation of Our Environment

National 4-H Local Leaders Association
Roseau, Dominica

National ECS CSA Competition Winner

4-H CLUBS Learning By Doing Dominica

Caribbean Climate Smart Agriculture FORUM

Contributions to Climate Smart Agriculture

Terracing, improved drainage and crop diversification have helped to decrease soil erosion and manage the more intense rains Dominica experiences. Mulching, composting and the incorporation of leguminous plants enrich the soil and help retain soil moisture. Exposing students at a young age to the challenges and solutions to climate change helps to ensure that the future farmers of Dominica have the knowledge and skills to adapt.

Mixed planting methods were promoted to enhance food diversity and educate students about the importance of diversity for food security. The project strengthened the interest, motivation, and capacity of students to engage in sustainable food production that supports both a healthy environment and a healthy diet.

The rearing of poultry, rabbit and goats eliminates the need to utilize agro-chemical fertilizers during food production. The planting of tree crops as windbreaks and for fruit production enhance carbon sequestration.

Climate change signals:

Increased climate variability

Increased temperatures

Changes in precipitation patterns

Climate smart practices and technologies:

Water management

Soil Management

Diversification

Alternative farming methods

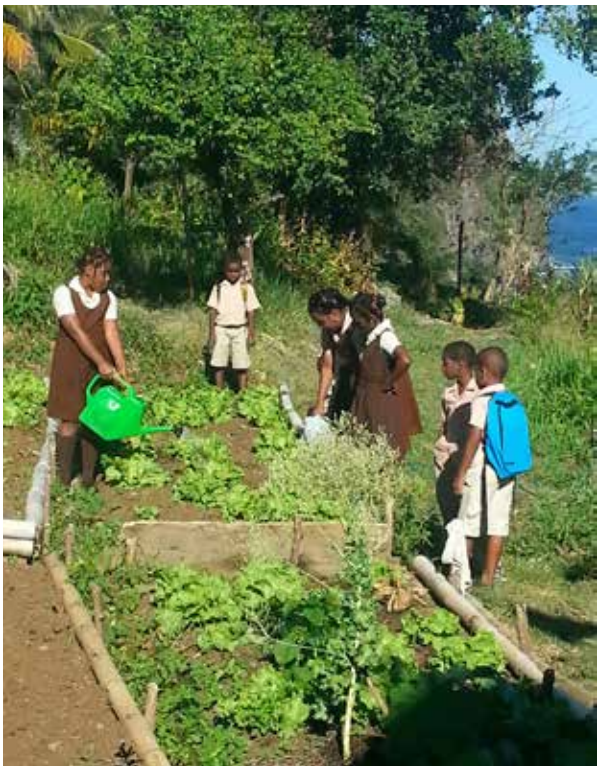
Agroforestry

Capacity development

Landscape management

The challenges posed by climate change

The Caribbean islands are and will continue to be considerably affected by climate change impacts. Dominica, a 750 square mile island with a population of roughly 72,000, is no exception. Increased climate variability and higher temperatures are causing crop wilting and intensifying soil degradation. Agricultural systems are increasingly impacted by more frequent periods of intense drought interspersed by periods of intense rainfall and flooding. Vulnerability to the impacts is amplified due to deforestation and unsustainable tree harvesting, which has led to soil erosion, sedimentation in rivers, and a reduction of the soil's water holding capacity.



The 4-H Clubs at six primary schools in the Southern District of Dominica, including Bagatelle, Grandbay, Petite Savanne, Pichelin and Tete Morne recognized the impacts of climate change, and wanted to conduct awareness-raising and training to encourage the agricultural sector to begin to adapt. The area had a high dependence on fishing, and lower catches caused people to begin to seek additional sources of food. A lack of funding for appropriate technologies, capacity development, and community education on climate change in agriculture, combined with scarce technical support and limited inputs (animals, seedlings, etc.), were inhibiting action and innovation towards more resilient production systems in the district.

The solution

To help respond proactively to community needs for climate smart agriculture, the 4-H Clubs, led by the National 4-H Local Leaders Association, which serves students between ages eight and 12, joined forces with the Youth Development Division. In collaboration with the Agricultural Extension Unit and the Parent-Teachers Associations of the participating schools, they worked together to implement sustainable, climate-resilient agricultural practices, including and build in this area, including:

Crop Diversification: Students have been taught the importance of crop diversification in agricultural systems and also for food security and soil health. A wide range of crops – vegetables, fruits, herbs, root crops and greens - is being used to minimize soil erosion, boost soil nutrients and attract a multitude of beneficial insects. Crop diversification has inspired youth involved in the School Feeding Program to think about balanced diets, food security and nutrition.

Improved water management and land terracing: A system to improve field drainage was adopted to redirect rainwater and prevent the loss of fertile top soil. Rocky hillsides that were previously unusable for agricultural purposes are now thriving agricultural land. In school feeding programs, elevated garden beds were designed with side drainage made of renewable resources such as logs, bamboo, and stones to educate students on the importance of soil health and proper field drainage.

Infrastructure improvements: To address higher temperatures, tree crops were planted and netting and greenhouses used to provide shading for small vegetable crops. Irrigation (water lines and hoses) also played a major role in some of the schools involved with a focus on water conservation.

Boosting soil health: Dried grass was used as mulch to reduce soil temperatures, minimize irrigation, and increase soil moisture retention in school gardens. Leguminous plants such as string beans and red beans, as well as pen manure, were incorporated to improve soil fertility. The construction of a compost shed has created an excellent learning environment to teach young clubites the importance of compost and technical composting techniques.

Poultry production: Availability of chicken manure for compost and soil fertilizer contributed to decreased dependence on chemical fertilizers, thus by extension, a reduction in greenhouse gas emissions, as well as increased soil fertility to facilitate the production of higher quality produce. This activity also benefitted the school feeding program. Rabbits and small ruminants have also been raised in several areas.

Capacity Building: 39 adults were trained to guide these efforts, half of whom are women. These leaders then went on to teach over 300 elementary school children about land preparation and planting techniques to increase youth awareness of climate change and environmental concerns

Results and contributions to the 3 pillars of climate smart agriculture

- Terracing of land for crop production has increased the area available for production of fruit trees and other crops, while providing erosion control and enabling proper drainage, thus helping to address some of the impacts of the more intense rains.

- Improved soil fertility and moisture levels were achieved through a combination of the interventions, and helped to lift productivity at five of the six schools involved.

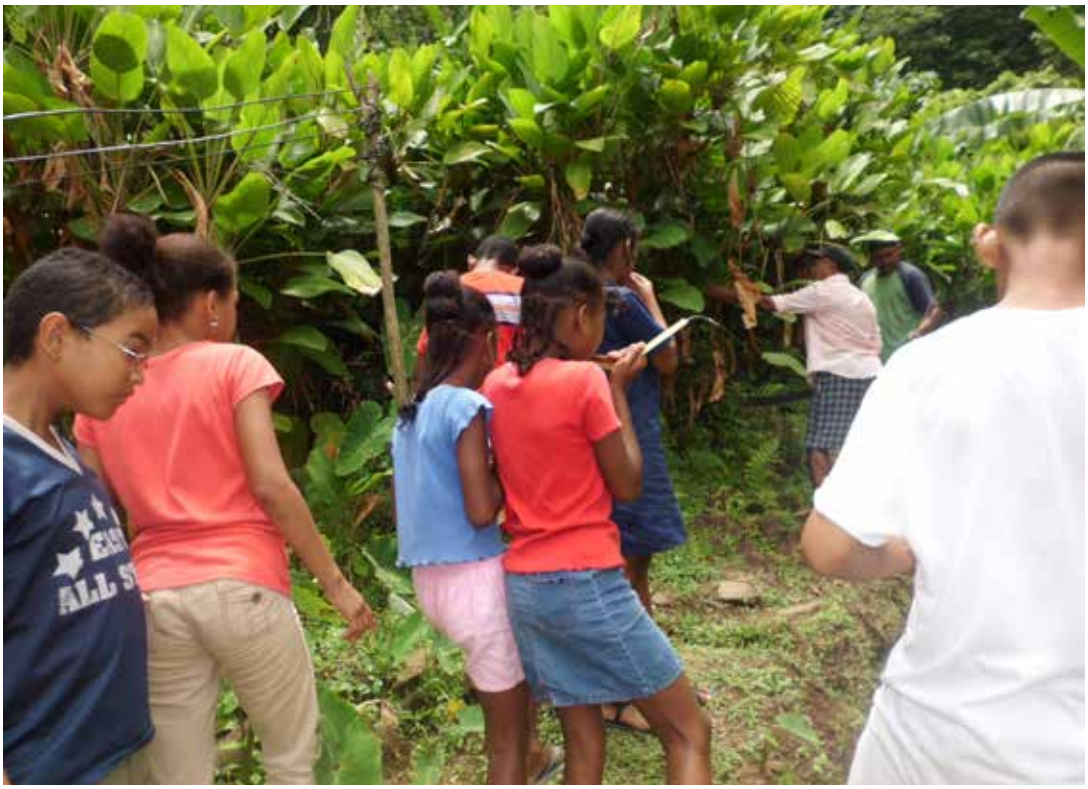
- Intercropping and diversifying crop production, as well as the use of fruit trees as wind breaks to reduce the stress on plant growth, have also contributed to increased productivity and minimizing losses due to climate variability. The latter also provides a habitat for pollinator and other wildlife species.

- Poultry, rabbits and goats provided additional sources of protein for students' diets. The use of organic animal fertilizers significantly contributes to the health of the farm ecosystem, and also reduces the dependence on chemical fertilizers which must be shipped from other islands.

- The School Feeding Program and residents of the village benefit from the increase in production and sustainable practices mentioned as the availability of nutritious products rose. The broader community is also learning from the project and interventions and thus is more aware of the impacts of climate change.

- A generation of young leaders have received skills and knowledge about climate change and sustainable agriculture. As a result of the many projects the 4-H has spearheaded, participation in backyard gardening at the sites has increased by 25%.

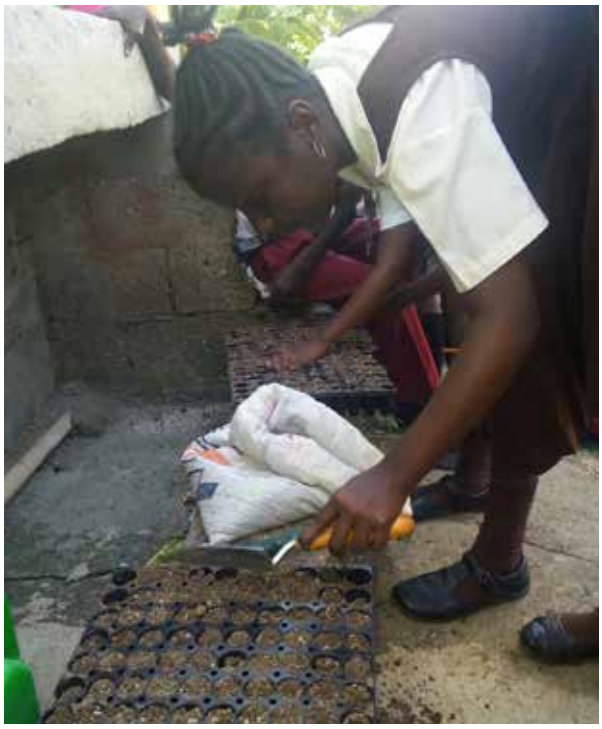
Prior to this effort, resources were not available to fund sustainable agriculture education projects in this region of Dominica. Through this experience, the 4-H clubs in the southern districts were able to gain practical skills in sustainable agriculture. As a result, over 330 youth (57% female) and adults have been trained, many of whom continue working to make Dominica's production systems more resilient to climate change and other risks.

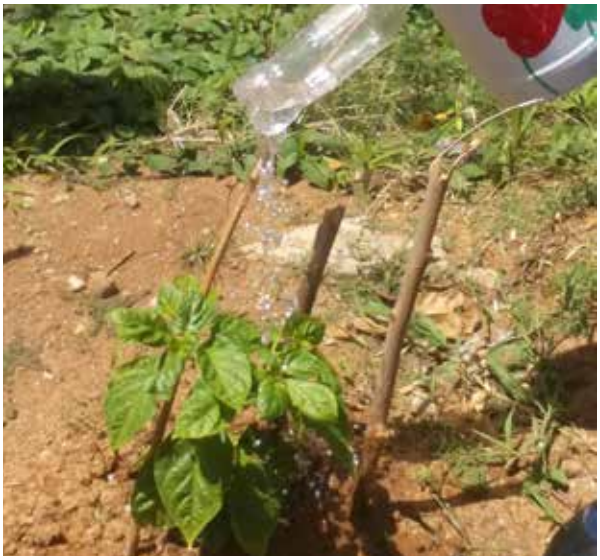


Lessons Learned

Through these educational experiences for youth, much has been learned by all those who participated. Sustainable agriculture education provides an excellent avenue for involving youth in climate change and sustainability issues, not only because of the importance of the sector but also because it provides a hands-on, visible way for the youth to make a positive impact on their communities.

The grant funding provided great motivation and incentive for the Youth Officers and Leaders to both generate support for their club projects and upgrade their agricultural plots at school and at home. This kind of practical approach to youth involvement in agriculture serves as a catalyst for stimulating the interest of the youth, not only in agriculture, but also in climate change and broader environmental issues. ■





Climate Smart Agriculture (CSA) is an approach to developing the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change. The goal of CSA is to enable the sector to transition towards more climate-resilient production systems and more sustainable livelihoods in the presence of climate change stressors and climate variability. The three pillars of CSA interventions and practices are intended to:

1. Sustainably increase agricultural productivity and incomes (i.e. strengthen livelihoods and food security, especially of smallholders);

2. Adapt and build resilience to climate change;

3. Reduce and/or remove greenhouse gases emissions, where possible and appropriate.

Caribbean countries are particularly vulnerable to climate change related risks, and in response, are actively seeking to develop agricultural production systems that are resilient to climate related risks and stressors and make efficient use of the limited natural resources available. In that regard, efforts are made to develop, identify, promote and disseminate innovative farming systems, farm technologies, strategies and measures that will help to build resilience and increase the productivity and viability of the agriculture sector in the region.

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The ECS CSA Competition was generously supported by:

Embassy of the Kingdom of Morocco in St. Lucia