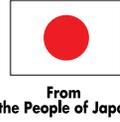


# CASE STUDY



Empowered lives.  
Resilient nations.

## The Japan-Caribbean Connection

The Transfer of Agrotechnology from Japan to the Caribbean



## Background

The Caribbean region is highly susceptible to the effects of climate change, and the region has already begun to experience the devastating consequences of a warming world. Some of these environmental changes include rising sea levels, more intense hurricane seasons, and extended dry seasons resulting in reduced wet seasons. These effects directly impact Caribbean economies, ecosystems, communities, and their capacity for sustainable growth.

Caribbean farmers are well aware of the impact of natural hazards, many of which have been exacerbated by climate change. Frequent and unpredictable droughts, flooding, pests and soil erosion are just

a few of the current phenomena impacting crop yield and, by extension, the region's food security. Various Caribbean governments and developmental organisations have begun implementing projects and strategies to mitigate the impacts of climate change. As such, the United Nations Development Programme's Japan-Caribbean Climate Change Partnership (UNDP J-CCCP), coordinated a study tour focusing on transferring knowledge and applicable technologies from Japan to the Caribbean in the field of agriculture. This case study highlights the key points, takeaways and insights as it relates to the North-South and South-South transfer of technology required to develop a more resilient agricultural sector in the Caribbean.



Study tour participants listen to a representative from the Japan Organic Agriculture Association (JOAA)

### Learning from Japan

Twenty farmers and agricultural officers from 11 Caribbean territories participated in the 10-day [Japan-Caribbean study tour](#) in April 2018, which allowed the individuals to travel to Japan and experience first-hand, the innovative techniques that Japanese farmers were successfully employing to boost crop resilience and bolster their agricultural industry.

### The Japan-Caribbean Study Tour

The tour allowed participants to engage with both farmers and technical specialists in Japan to earn technical knowledge as well as practical applications. Participants were exposed to various agricultural practices and technologies, including organic and natural farming, permaculture, and protected agriculture such as vertical farming, and light plant factories. They were also introduced to innovative advancements including membrane and hydrogel technologies. The tour concluded with a ceremony, where the participants presented their experience related to the effects of climate change and adaptation efforts in agriculture.

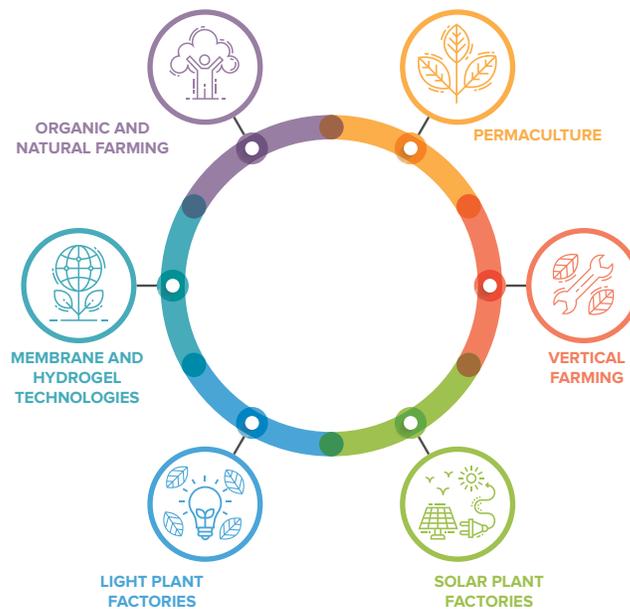
Caribbean countries involved in the Japan-Caribbean study tour: Belize, Commonwealth of Dominica, the Cooperative Republic of Guyana, Grenada, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, the Republic of Suriname.

### The Japanese Way – Techniques and Technology

During the Japan-Caribbean study tour, several techniques and technologies were highlighted. The Caribbean region currently employs some of these techniques, but the tour expanded the participants' knowledge base and emphasised the use of innovation to improve productivity in cropping systems e.g. film farming using hydrogel.

[Click here for more images of the Japan-Caribbean study tour.](#)

## CARIBBEAN TECHNOLOGIES ENHANCED BY THE JAPAN-CARIBBEAN STUDY TOUR:



## After the Trip: Impacts of the Study Tour

The techniques and principles acquired during the Japan-Caribbean study tour had several positive outcomes in the various territories where the knowledge was shared.

### A Changing Regional Mindset

- The study tour widened the horizons of participants and began a paradigm shift in the Caribbean's approach to its agricultural industry. Those present indicated that they reconsidered concepts that they had previously been aware of, and were introduced to new techniques that could be immediately implemented.

*"The study tour gave us a new perspective on how to enhance our farming techniques. Some of the things we were aware of before but it helped us change our mindset on what we can achieve. Personally, I was able to enhance my own farm and can now recover faster from the effects of hurricanes."*

**Kervin Vidal, participant from Dominica**

*"The concept of permaculture is an ideal one that should be implemented in our cropping systems even after the passage of Hurricane Maria<sup>1</sup>."*

**Taletha Laudat, participant from Dominica.**

### Increased Revenue Generating Opportunities

- Organic approaches highlighted in the tour have the potential to ignite agro-tourism and develop agricultural cooperatives at the community level.
- As a direct result of the techniques learned during the Japan-Caribbean study tour, for example using soil pH and moisture meters, one Dominican farmer was able to expand his business to include an agro-processing section, which enhanced his revenue and allowed him to employ two additional workers.

### South-South Knowledge Sharing

- UNDP partnered with Inter-American Institute for Cooperation on Agriculture (IICA), who participated in the study tour to organise a follow-up [webinar](#) which was attended by 50 persons and where four study tour participants shared knowledge gained from the tour .

<sup>1</sup>Hurricane Maria occurred in 2017 and is regarded as the worst natural disaster on record to affect Dominica. It was categorised as the deadliest Atlantic hurricane since Jeanne in 2004.

- Two study tour participants presented a paper entitled 'Big Science and its Role in Food Security: A Comparative Analysis between the Caribbean SIDS and Japan' at the University of the West Indies (UWI) International Food Security Conference in Trinidad and Tobago in November, 2018
- One study tour participant shared knowledge gained from the trip on national radio in Dominica, which had a listenership of approximately 10,000, during a prime time call-in programme. Following the programme, 4 farmers directly contacted the study tour participant to gain further information on the techniques shared. This participant also presented to community youth groups and was a participant on a panel discussion for young entrepreneurs hosted by the Dominican Youth Business Trust
- Other participants were invited to give presentations as well, including a television interview reaching approximately 500 persons



Example of a sustainable agriculture practice highlighted on the study tour

## Putting Theory to Practice

The techniques learned in the study tour were applied in the following ways:

- **Change in Crop Type**  
The Japan-Caribbean study tour exposed farmers to the benefits of growing crops, which yielded in shorter periods resulting in boosted revenues.
- **Maintaining Seed Stocks**  
This practice, which was highlighted in Japan, ensured that farmers had the ability to replant faster after a disaster.
- **Improve Soil Quality of Farm**  
The natural fertilisers and organic techniques learned during the Japan-Caribbean study tour allowed farmers to improve soil quality and boost output.
- **Expanded Business**  
Using the techniques and knowledge gained in Japan, one farmer was able to expand his business to include agro-processing.
- **Creation of Tools**  
Local farmers now have the ability to build low input /high output tools that can assist in their daily work.
- **Use of Organic Fertilisers**  
This reduced the cost to farmers who could recycle and compost instead of purchasing expensive commercial fertilisers.

# Mission to Sustainability

The project achieved results within Outcome 3 of the Japan-Caribbean Climate Change Partnership, which relates to strengthened knowledge networks through shared South-South and North-South experiences. The knowledge gained from the study tour addresses some of the Sustainable Development Goals (SDGs), designed to assist the world in reaching the prior Millennium Development Goals (MDGs).

## SDGs Addressed Included:



### Goal 2: Zero Hunger

The techniques learnt during the tour are expected to boost the capacity for agricultural productivity and are expected to assist the Caribbean in developing sustainable food production systems. Growing more resilient crops, reducing wastage through composting, employing improved farming techniques and ensuring shorter rebound periods will allow countries to bolster their food production capacity and help alleviate hunger.



### Goal 12: Responsible Production and Consumption

After the tour, participants were armed with knowledge on how to improve recycling, produce natural organic fertilisers and gain more output from less inputs. Additionally, a presentation of climate proofing technologies to improve food insecurity was hosted at a UWI International Food Security Conference.



### Goal 9: Industry, Innovation and Infrastructure

The participants now have the technical skills to create advanced tools, employ new farming techniques and explore innovative practices in agriculture.



### Goal 13: Climate Action

The South-South transfer of knowledge promotes responsible farming and reduces the dependence on commercial fertilisers that result in the emission of greenhouse gases.



Experimentation of various light sources in a vertical hydroponic system built by Saint Lucian study tour participant



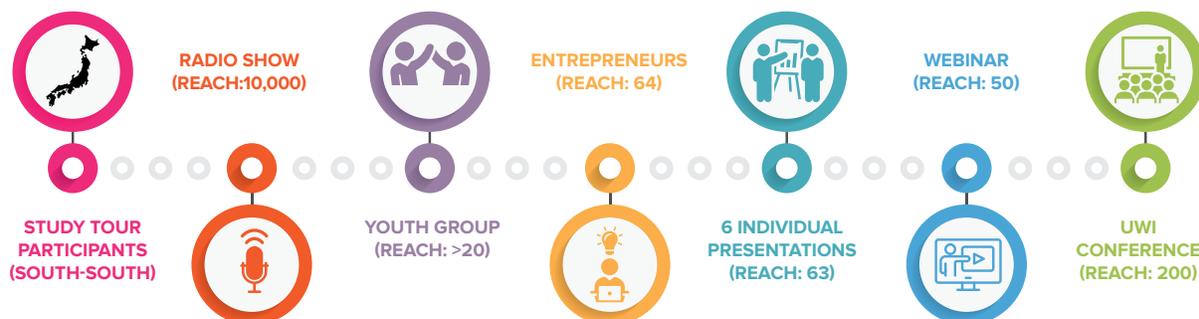
Soil and pH monitor being used by a Dominican farmer to test optimal conditions for planting



Sowing device replicated by a farmer in Dominica, following the Japan-Caribbean study tour

## Transfer of Knowledge from Japan

The insights gained from the Japan-Caribbean study tour were cascaded through the various territories and communities after the participants returned home. Here is a snapshot of the transfer of knowledge:



## Insights & Take-aways:

Expanded Transfer of Knowledge	Private-Public Partnerships	A Changing Regional Mindset
<p>The tour, through North-South transfer of knowledge, was able to directly educate 20 participants who then transferred this knowledge to several other groups through South-South transfer.</p>	<p>It is important to note that the benefits of private-public partnerships were highlighted in Japan's practical examples such as Chiba University and The University of Tokyo where the institutions are actively partnering with commercial entities to advance research and, by extension, the entity's productivity and profits.</p>	<p>Participants noted that the tour was very beneficial in providing them with an expanded view on the possibilities of the Caribbean agricultural sector.</p>

“ Caribbean nationals are sharing among each other and at the same time, being exposed to new methods and technologies. Japanese organisations are also benefiting from new avenues and markets for technology transfer. ”

**Chisa Mikami**

Resident Representative a.i. for the UNDP Sub-regional Office for Barbados and the OECS

## Best Practices

Several best practices have been identified in implementing the activity of technology transfer as outlined below:

- **Pairing Low-tech and High-tech Applications**

The study tour combined a range of technologies which allowed the immediate application of some techniques (low tech) and planned applications of others (high-tech).

- **Regional Outreach**

A wide cross section of pertinent individuals including those from regional organisations and NGOs allowed for greater South-South transfer of knowledge.

- **Pairing of Farmers and Technical Officers**

Having both groups present meant that both the policy and practical decisions required, were made in unison. That resulted in greater buy-in which allowed for easier adoption of practices after the participants returned to their territories.

- **Knowledge Sharing Directly After the Trip**

Participants capitalised on the momentum and excitement directly after the trip to begin the South-South transfer of knowledge. This ensured that the knowledge was transferred before it could be forgotten and encouraged a wider cross section of persons to benefit from the information.

- **Involving Youth**

Educating the youth demographic and involving them in sustainable agricultural practices is vital for the growth of any industry or community — throughout

this project special emphasis was taken to educate the youth. Young people were nominated to attend the Japan-Caribbean study tour and there were several community youth group outreaches after their return.

- **Community Outreach**

It is important that knowledge does not remain in silos, and as seen in the Dominican example, participants shared their knowledge via radio, webinars and several community interactions to reach a wide cross section of persons that can benefit from this transfer of knowledge.

- **Primary/Direct Transfer of Knowledge**

The project allowed farmers and agricultural officers to receive the information directly from fellow farmers and agricultural stakeholders in Japan. This allowed for greater collaboration, less resistance and more buy-in compared to if the information had been distributed by secondary informational sources (e.g. leaflets and pamphlets).

- **South-South Knowledge Sharing**

The knowledge gained from the trip was directly shared with the participants' respective communities, as well as other territories that were unable to be involved in the project. This sharing of information allowed the knowledge to far surpass the 20 individuals who initially received it.

## Final Thoughts

The knowledge received by the 20 participants in the Japan-Caribbean study tour is likely to have reached over 10,500 persons in the Caribbean. Eleven islands have received additional techniques, tools and ideas to bolster their agricultural industries, and the region on a whole is increasing its capacity to effectively promote sustainable growth.