Building Capacity to Increase Agricultural Productivity

The rapid rise in food prices in 2008 and its negative impact, especially in developing countries which have high food import bills, brought into sharp focus the need for a level of food security by such countries.

Among the factors contributing to high food import dependence is reduced productivity and output of domestic food production. The challenge is to increase output in order to maintain some level of food security. This is a challenge for this country whose food import bill is in the region of $4 billion.

The message is clear, we have to increase agricultural productivity and by extension, output if we are to reduce our food import bill. To achieve this, we have to increase the capacity of our farmers. They must be encouraged to innovate. In agriculture, innovations can include new knowledge or technologies related to primary production, processing, and commercialization—all of which can positively affect the productivity, competitiveness, and livelihoods of farmers and others. By putting farmers and other operators in the agriculture value chain at the centre of innovative practices and encouraging learning through the interchange of ideas, successes, and failures, they can develop the capacity to operate efficiently and so increase productivity.

Capacity is defined as "the ability of people, organizations and society as a whole to manage their affairs successfully. Capacity development is the process of unleashing, strengthening and maintaining of such capacity".

Providing good advice to farmers and enhancing their decision-making capacity is the best way to promote the sustainable intensification of agriculture.

Building Capacity through Research and Development

Increasing agricultural productivity requires building the capacity of farmers to innovate and adopt new technologies. Local knowledge is crucial for survival, but for farmers to be agents of their own development, it is not enough. Agricultural research and development (R&D), which provides a knowledge base for technologies that can be used by farmers to innovate, is also necessary. Furthermore, agricultural R&D can drive sustainable agricultural growth at the national level.

Continued on back page
In this issue of the GreenVine we highlight Wa Samaki Ecosystems, the 2009 National Agricultural Entrepreneurial Award winner in the category of Agro Forestry.

Wa Samaki Ecosystems started out as a tropical fish farm 12 years ago, using an intensive indoor recirculating system, to supply the Toronto market with cichlids. However, due to the unavailability of cargo space, high labour costs and competition from the Far East, the export markets were lost and intensive production was discontinued. Today Wa Samaki produces a small amount of ornamental fish to supply the local pet shops.

Mr Erle Rahaman-Noronha, the owner of Wa Samaki Ecosystems has dedicated his time to the development and promotion of permaculture for the past 10 years on his 33 acre holdings in Central Trinidad.

According to Mr Rahaman-Noronha "Permaculture is designing for sustainability. It operates on the ethics of care of earth, care of people and care of the community (fair share)".

This permaculture system is comprised of 5 zones as follows:

**Zone 1 – Intensive House Garden**

This zone is closest to the dwelling house and occupies about 1/3 acre. It is currently being used for producing vegetables for the home as well as for nursery propagation for the farm.

**Zone 2 – Landscape garden/orchard**

This zone includes ornamental plants as well as some fruit trees. Plants in this zone occupies about 1 acre and are focused on improving soil fertility. As such nitrogen fixing plants such as tamarind, flambouyant and glyceridia are grown. In addition, Mr Noronha has established fodder crops to be used as food for livestock.

**Zone 3 – Production beds**

This area occupies between 3 – 4 acres of land and is concentrated on flower production.
The farm has close to 30 different varieties of heliconia, 8 varieties of ginger lillies and torch lilies as well as 4 varieties of ornamental bananas.

This production sustains the cash flow on the farm. On a weekly basis over 1,000 blooms are sold on the local market. The production beds are integrated close to water sources (man made ponds) and are shaded by larger tree crops which produce shade and minimizes the need for shade houses.

**Zone 4 - Forestry**
This zone occupies about 15 acres and is comprised of a variety of lumber trees including, teak, cedar, poui, mahogany and fiddle wood. Systems put in place to manage his forestry include:
- Close spacing of trees encourage trees to grow straight, once the trees start touching each other they are thinned out
- Trees are pruned regularly to encourage them to grow straight and tall
- Litter from the trees are incorporated into the farm to make compost as well as for mulching to conserve water
- Fire trails are well maintained
- Water is trapped using contour drains which encourage the water to go into the water table and not run off

**Zone 5 – Wild area**
This area occupies about 5 acres and indigenous trees and wildlife are encouraged to grow here. Mr Noronha explains that this area helps with biodiversity as well as with the rehabilitation of the watershed.

Given the current situation with the global food supply, Mr Noronha plans to incorporate food production as a key activity in his farm. He plans to produce organically grown vegetables and root crops in zones 2 and 3 as well as livestock.

Mr Noronha uses the Wa Samaki Ecosystems as a demonstration farm to teach people about permaculture. Short courses are taught on the farm by Mr Rahaman-Noronha, Mr John Stollmeyer and Dr Hugh Skinner. In addition, Mr Noronha currently works with 30 schools, in the South West Peninsula, teaching them about the environment. This project is sponsored by Atlantic LNG.

Mr Noronha plans to get into agrotourism by setting up cabanas, mountain bike trails, campsites and fishing in the near future.

Further information can be found on Wa Samaki website: www.wasamakipermaculture.org

Erle was born and grew up in Kenya, lived in Canada and now makes Trinidad his home. He teaches and practices Permaculture and is the owner of Wa Samaki Ecosystems, formerly a citrus estate now undergoing a Permaculture restoration while producing cut flowers, tropical fish and indigenous food crops.

His farm has won agricultural entrepreneur awards for forestry, aquaculture and horticulture. He is the current national winner of the Agroforestry division and national runner up in the Horticulture division for the National Agricultural Entrepreneur of the year 2009.

He has a BSc in Applied Biochemistry and an MSc in Zoology from the University of Guelph, has completed two Permaculture Design Courses in Trinidad (07) and Belize (09), as well as short courses in Intensive Aquaculture (Cornell University), Dendrology (Eastern Caribbean Institute of Agriculture and Forestry) and Tropical Landscaping (University of the West Indies).

He has been involved with two Knowing and Growing Workshops in Jamaica, used as a Permaculture expert by IICA in Suriname, and has taught Permaculture Design courses in Trinidad (08,09) and Puerto Rico (09). He is also a photographer and an accomplished adventure racer and ultra marathoner.
CLIMATE CHANGE
Adapting into the future

Part II

We have the knowledge right now to make vast improvements to the sustainability and productivity of agricultural and other natural resource-based systems in developing countries – improvements that can compensate for the negative impacts of climate change at least in the near years, and at the same time build resilience to more distant changes in the climate. There is no reason or excuse not to put this knowledge into action.

The sections below describe some of the changes that can be made.

Facing up to the water crisis

Water is the defining link between the climate and agriculture. But even without climate change, the situation is already difficult. Competing demands mean that water availability has become an urgent issue facing farmers (and other users) the world over. Climate change will exacerbate an already critical situation.

In developing countries, agriculture consumes 70–90% of total water use. With growing populations, and competing demands from other sectors, this is not sustainable. There is no alternative – more food must be produced using less water.

On the whole we know how to do this. There are many relatively simple and low-cost technologies – some based on traditional water management techniques, others new – that can improve water use in agriculture, both rainfed and irrigated. Water harvesting, precision irrigation and multi-use reservoirs are just some of many options for eking out limited water supplies, while low quality water can be managed and used in certain systems.

Overarching these must be improved management of watersheds. Indiscriminate clearing of lands and cutting of hillsides reduces the available supply of water.

Crops for an uncertain future

Climate change focuses attention on the current varieties of crops grown. Breeding must focus on varieties that are drought and heat tolerant. But at the same time, and particularly in light of the uncertainty of climate change, crop varieties must do much more. Farmers depend on their crops performing well in good years, so the need is for crops that are able to perform in difficult environments, but also produce high yields when conditions are more favourable. Breeding for vigorous root systems, for example, allows plants to capture scarce water.

Sustainable soil management

Even without climate change, deteriorating soils are one of the main challenges to future agriculture. Reducing vulnerability of farming systems in the face of climate change demands a turn-around in soil management. We know a great deal about sustainable soil management, but we now need a concerted effort to overcome the obstacles that have prevented more widespread uptake of these methods. Helping farmers appreciate the true value of their soils will be key, through participatory research and learning.

Some examples of proper soil management are conservation agriculture, eco-farming and micro dosing.
Managing changing pests and diseases

Keeping up with changes in pests and diseases of crops and livestock will be another significant challenge as the climate changes. Temperature, humidity, rainfall and other weather parameters influence pest and disease spread through different mechanisms. Higher temperatures speed up the lifecycle of some insect pests, for example, so that pest populations grow faster.

Anticipating pest and disease outbreaks, and integrated pest and disease management (IPDM) where outbreaks occur, are the fundamentals behind managing changing pests and diseases into the future. Participatory learning is implicit in IPDM, so that farmers come to understand the relationships between crops, pests and diseases, and climate. With this knowledge they can adapt their own systems and build resilience.

Livestock systems for the future

As the climate changes, there will inevitably be impacts on livestock and livestock-based systems. At the same time, as the global demand for meat and other animal products increases, animal numbers are growing rapidly, with accompanying impacts on ecosystems such as rangelands and pasturelands, and on demand for water.

The solution is to manage growth of the livestock sector sustainably, through adaptive strategies that simultaneously address the climate challenge to livestock-based systems and the livestock pressure challenge to the environment. Examples include using livestock species and breeds best suited to future climates, and adapting flock composition. Managing feed supplies will also be critical.

Sustainable fisheries and aquaculture

Fishing and aquaculture provide food and livelihoods for many millions of resource-poor people, and may become even more important to global food security as the climate changes and other sources of food become less reliable. Both are vulnerable, however, to a range of environmental pressures including climate change. Many capture fisheries worldwide have declined sharply in recent decades or have already collapsed from overfishing, while pollution, mismanagement of freshwater and coastal development also pose serious threats. Adaptive strategies must address these problems, as well as those that a changing climate will add.

Aquaculture, on the contrary, is growing in many parts of the world, and offers some good opportunities to adapt to climate change. Climate change could open up new opportunities for aquaculture as the sea encroaches on coastal lands, as more dams and impoundments are constructed in river basins to buffer changing rainfall patterns, and as urban waste demands more innovative disposal. Small-scale aquaculture also holds promise as an option for diversifying livelihoods.

Aquaculture may go some way to compensate for the decline in capture fisheries in the coming years, but that certainly does not mean capture fisheries – and the aquatic ecosystems on which they depend – should be ignored. Small-scale capture fisheries provide food and livelihoods for some 150 million people; and the world’s seas and rivers provide a host of environmental services beyond food production, which means their sustainable management should be high on any environmental agenda for the future.

Fishing and aquaculture may become even more important to global food security as the climate changes and other sources of food become less reliable.

The message is that we have to start putting plans in place now to face and deal with climate change and minimise the negative impact. This requires a collaborate effort from policy makers, researchers, producers and consumers.

(Extracts From Climate, Agriculture And Food Security- A Strategy For Change-the Consultative Group On International Agricultural Research (CGIAR) - December 2009)
REVIEWS OF JANUARY WHOLESALE FRESH PRODUCE PRICES AND VOLUMES

Root Crops

The price of root crops increased by an overall 5% in January when compared to December 2009. The largest price increase was observed for Carrot.

It started the month at $5.51/kg, rose steadily to close the month at $10.71/kg, a 27% decline was recorded in the volume of Carrot traded at the NWM. The price of Eddoes (Imported) started at a high in the beginning of the month and fell to close the month at $7.30/kg as supplies increased.

<table>
<thead>
<tr>
<th>Item</th>
<th>Prices (Dec/Jan)</th>
<th>% Change</th>
<th>Volumes (Dec/Jan)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrot (kg)</td>
<td>5.69/7.51</td>
<td>27%</td>
<td>191,170</td>
<td>140,140</td>
</tr>
<tr>
<td>Cassava (kg)</td>
<td>4.66/4.97</td>
<td>6%</td>
<td>46,134</td>
<td>33,258</td>
</tr>
<tr>
<td>Dassheen (Local) (kg)</td>
<td>6.52/6.82</td>
<td>5%</td>
<td>25,249</td>
<td>16,529</td>
</tr>
<tr>
<td>Eddoes (Imported) (kg)</td>
<td>7.36/10.32</td>
<td>-42%</td>
<td>222,547</td>
<td>176,369</td>
</tr>
<tr>
<td>Sweet Potato (Local) (kg)</td>
<td>4.66/5.09</td>
<td>-7%</td>
<td>7,898</td>
<td>7,237</td>
</tr>
<tr>
<td>Ginger (kg)</td>
<td>8.71/10.69</td>
<td>23%</td>
<td>42,256</td>
<td>34,267</td>
</tr>
<tr>
<td>Yam (Common)</td>
<td>4.10/4.76</td>
<td>-21%</td>
<td>8,798</td>
<td>7,237</td>
</tr>
</tbody>
</table>

Leafy Vegetables

With the exception of Chive, the other items in this category had price decreases in the range of 10 to 17%. Celery prices started at the month at $19.88/bdl and fell consistently to close the month at $10.40/bdl. Supplies averaged at 4,000 bundles per week. The prices of Hot Pepper and Pimento (M) fell by 15 and 10% as their volumes also fell by 1 and 33% respectively.

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</thead>
<tbody>
<tr>
<td>Cabbage (Local) (Gn) (kg)</td>
<td>15.41/18.38</td>
<td>-10%</td>
<td>7,999</td>
<td>5,381</td>
</tr>
<tr>
<td>Spinach</td>
<td>4.00/4.76</td>
<td>-21%</td>
<td>22,162</td>
<td>17,335</td>
</tr>
<tr>
<td>Patchol</td>
<td>0.00/0.00</td>
<td>0%</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Condiments & Spices

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Vegetables

This category registered the highest overall increase in price of 20%. Three commodities, Bodi Beans, Cucumber and Melongene (M) were responsible for this situation as their volumes fell in the range of 40 to 61%. The most significant increase was noted for Cucumber. Cucumber prices increased steadily throughout the month, starting at $5.85/kg and closing at $19.88/kg.

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Bodi Beans</td>
<td>19.61/28.25</td>
<td>44%</td>
<td>17,300</td>
<td>8,155</td>
</tr>
<tr>
<td>Cucumber</td>
<td>3.65/5.82</td>
<td>133%</td>
<td>194,253</td>
<td>76,467</td>
</tr>
<tr>
<td>Melongene (M)</td>
<td>4.40/5.56</td>
<td>29%</td>
<td>20,145</td>
<td>6,827</td>
</tr>
<tr>
<td>Sweet Pepper (M) (kg)</td>
<td>7.65/14.57</td>
<td>-17%</td>
<td>17,534</td>
<td>10,987</td>
</tr>
<tr>
<td>Tomato (M)</td>
<td>13.31/18.89</td>
<td>-33%</td>
<td>70,038</td>
<td>43,158</td>
</tr>
<tr>
<td>Pumpkin</td>
<td>3.10/4.06</td>
<td>-26%</td>
<td>180,917</td>
<td>149,752</td>
</tr>
</tbody>
</table>

Fruits

The prices of Papaya and Watermelon fell by 14 and 6% respectively even though their volumes fell. Pineapple prices increased by 20% as supplies fell by 26%.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Papaya (kg)</td>
<td>7.85/9.78</td>
<td>22%</td>
<td>78,225</td>
<td>64,392</td>
</tr>
<tr>
<td>Pineapple (kg)</td>
<td>7.27/8.71</td>
<td>20%</td>
<td>44,180</td>
<td>32,840</td>
</tr>
<tr>
<td>Watermelon (kg)</td>
<td>6.30/5.94</td>
<td>-6%</td>
<td>64,003</td>
<td>54,432</td>
</tr>
</tbody>
</table>
Guidelines For Hot Pepper Production

Hot peppers are grown year round throughout the country to satisfy both the local and export markets. Hot peppers belong to the *Capsicum chinense* (Jacq.) species. Known for its “heat, aroma and pungency”, hot pepper is an integral part of the local cuisine. These characteristics are not only demanded by us but also by the ethnic diasporas internationally and now by the mainstream market the United States, Canada and the United Kingdom.

Hot pepper production is by no means a backyard past time to satisfy our kitchen demands or to make some homemade pepper sauce to send back with visiting relatives. It can be regarded as a non traditional commercial crop accounting for one of the largest income earnings within its class for both the fresh fruit and its processed products. There is tremendous potential for growth in the industry.

Over the last few years, there has been a decline in the exports of hot peppers but at the same time a growing demand for the said product. This decline can be attributed to a number of reasons and production might be listed as one of those that need to be addressed. It is not uncommon to hear of fields being lost as a result of uncontrolled pest and disease, flooding, drought and in some cases inability to harvest the field due to labour shortages. This article seeks to identify some of the critical issues that one should consider when entering into commercial hot pepper production.

**Market Requirement**

Like any commercial production enterprise one should know the market requirements. These include:
- Intended use - fresh vs processed
- Variety and physiological characteristics
- Volume required and when
- Handling requirements
- Production systems
- Hygiene and sanitation on the farm
- And of course the price

**Cost of Production**

or “Cost Of Realizing The Product To Market”

Being impressed by the market price for hot peppers you have decided to plant peppers for commercial sale. You know what the selling price is, but do you know what is the cost of production? In previous publications we showed how you can calculate the cost of production. These principles can be used to calculate the cost of production for your hot pepper crop. This figure would afford you the comfort of knowing how much (acreage) you can produce and more importantly for the profit margin. It will also assist in determining how much financing you might need to realize your crop.

**Management Capacity**

Considering all of the above and having satisfied these requirements you have decided that hot peppers is the crop that would earn you a substantial income. But can you manage the crop?

You should ask yourself the following questions: *Can I:*

- **✓ Adequately prepare the land for cultivation?**
- **✓ Manage the water requirements of the plants?**
- **✓ Manage the fertilizer needs of the plants?**
- **✓ Manage pest and disease on the plants?**
- **✓ Manage weeds in the fields?**
- **✓ Manage and source adequate labour?**

If the answers to these questions are yes then you are well on your way to producing a successful crop.
You might be asking yourself when will the guidelines for hot pepper production article start. In fact the article is half way there already.

Up to this point you have been guided on some of the key management functions that you should be aware of. Many times these are not taken into account and the crop is not realized as envisaged. This can account for some of the problems experienced over the last few years and can be attributed for the decrease in production and market share for fresh hot pepper berries on the international market.

**Variety**

When it comes to commercial hot pepper varieties, there is limited availability. Farmers have relied on the selection of local land races over the years to sustain the industry. Clearly this has its disadvantages as if care is not taken disease can spread from one crop to another and also from one location to the other.

Some of the common land races include, Faria, Congo, Hood, and Seven Pod. The Caribbean Agricultural Research and Development Institute (CARDI) has embarked on a programme to purify local landraces. Of the seven landraces Hood, Moruga Red, Faria and Moruga Yellow has the characteristics which the local and export fresh market prefer.

Once the desired variety is obtained you should have them grown out by a reputable nursery operator. If you choose to establish your own nursery, ensure that the seedlings are ready in four weeks, are in good health and pest and disease free.

*In the next issue of the Greenvine, we will look at management practices and crop care for the hot pepper crop.*
Review of Wholesale Prices and Volumes 2008 vs 2009

Are we seeing a resurgence of agricultural activities and by extension increase in production? To give some answers we have reviewed volumes and prices for 2009 as against 2008 for commodities traded at the Northern Wholesale Market, Macoya.

Root Crops

With the exception of Carrot, the total volumes of all root crops (5.8 million kgs) increased by 41% in 2009 over 2008 figures (4.1 million kgs). The combined price per kg of all these commodities fell by 9% in 2009. Amongst the individual commodities, the largest decreases were for Dasheen (Local) (34%) and Imported (40%). Of importance was the fact that local production increased for Dasheen (18%), Sweet Potato (55%) and Ginger (18%). Cassava and Eddoes volumes fell by 12 and 34% respectively.

Condiments and Spices

The volumes traded for all commodities in the grouping were up, except for Thyme which was down by 57%. There were increases for Hot Pepper (bags and 100’s) of 19 and 22% respectively. Pimento volumes (all sizes) were up by 21%. Supplies are normally tight for both these commodities and prices high. Last year, prices fell by 18% per 40 lb bag of Hot Peppers and an average of 10% for all sizes of Pimento.

Leafy Vegetables

Apart from Cabbage, there were increased volumes (all sizes) of Lettuce (16%), Patchoi (39%), Callaloo Bush (open – 14%, roll – 17%) and Cauliflower (12%). Double digit decreases were recorded for Patchoi and Spinach (14%), Cabbage (15%) and Cauliflower (12%).

Vegetables

There were increased volumes of Cucumber (32%), Melongene (L) (56%), Pumpkin (41%) and Sweet Pepper (all sizes) (28%), Tomato (all sizes) 32%, Cariille (L) (88%). The average price per kg of all commodities in this group, except Bodi Beans and Ochro, fell by 11% in 2009. Over the year buyers paid less for Cucumber (16%), Melongene (all sizes) (27%), Pumpkin (12%), Sweet Pepper (all sizes) 15% and Tomato (13%).

Fruits

Papaya and watermelon volumes increased by 41 and 61% respectively. Pineapple volumes fell by 27%. Watermelon price fell (4%) while Pineapple and Imported Banana were up by 11 and 3% respectively. The volumes of all citrus products fell, except Portugal while prices rose for all of them.

### COMPARISON OF PRICE AND VOLUME MOVEMENTS FOR SELECTED ITEMS 2008-2009

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Unit</th>
<th>2008</th>
<th>2009</th>
<th>% change 08 - 09</th>
<th>2008</th>
<th>2009</th>
<th>% change 08-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassava</td>
<td>Kg</td>
<td>3.84</td>
<td>4.63</td>
<td>21%</td>
<td>913,747</td>
<td>804,310</td>
<td>-12%</td>
</tr>
<tr>
<td>Dasheen (Local)</td>
<td>Kg</td>
<td>8.97</td>
<td>5.91</td>
<td>-34%</td>
<td>358,541</td>
<td>421,419</td>
<td>18%</td>
</tr>
<tr>
<td>Sweet Potatoes (Local)</td>
<td>Kg</td>
<td>5.32</td>
<td>5.33</td>
<td>0%</td>
<td>1,085,591</td>
<td>1,681,572</td>
<td>55%</td>
</tr>
<tr>
<td>Ginger</td>
<td>Kg</td>
<td>13.42</td>
<td>18.18</td>
<td>35%</td>
<td>288,734</td>
<td>341,373</td>
<td>18%</td>
</tr>
<tr>
<td>Thyme (s)</td>
<td>Bndl.</td>
<td>31.44</td>
<td>39.17</td>
<td>25%</td>
<td>15,363</td>
<td>6,575</td>
<td>-57%</td>
</tr>
<tr>
<td>Hot Peppers (40 lb)</td>
<td>Bag</td>
<td>288.98</td>
<td>235.66</td>
<td>-18%</td>
<td>13,047</td>
<td>15,490</td>
<td>19%</td>
</tr>
<tr>
<td>Pimento</td>
<td>100's</td>
<td>21.27</td>
<td>19.22</td>
<td>-10%</td>
<td>161,625</td>
<td>195,944</td>
<td>21%</td>
</tr>
<tr>
<td>Lettuce</td>
<td>Head</td>
<td>3.63</td>
<td>3.56</td>
<td>-2%</td>
<td>670,966</td>
<td>780,164</td>
<td>16%</td>
</tr>
<tr>
<td>Patchoi</td>
<td>Bndl.</td>
<td>4.57</td>
<td>3.94</td>
<td>-14%</td>
<td>328,545</td>
<td>455,811</td>
<td>39%</td>
</tr>
<tr>
<td>Cabbage (Local) (Gn)</td>
<td>Kg</td>
<td>8.42</td>
<td>7.14</td>
<td>-15%</td>
<td>841,003</td>
<td>794,113</td>
<td>-6%</td>
</tr>
<tr>
<td>Cucumber</td>
<td>Kg</td>
<td>5.26</td>
<td>4.40</td>
<td>-16%</td>
<td>1,518,578</td>
<td>1,999,489</td>
<td>32%</td>
</tr>
<tr>
<td>Melongene</td>
<td>Kg</td>
<td>7.34</td>
<td>5.34</td>
<td>-27%</td>
<td>686,441</td>
<td>884,109</td>
<td>29%</td>
</tr>
<tr>
<td>Pumpkin</td>
<td>Kg</td>
<td>3.26</td>
<td>2.87</td>
<td>-12%</td>
<td>1,807,140</td>
<td>2,543,573</td>
<td>41%</td>
</tr>
<tr>
<td>Sweet Pepper</td>
<td>Kg</td>
<td>12.26</td>
<td>10.48</td>
<td>-15%</td>
<td>544,281</td>
<td>698,787</td>
<td>28%</td>
</tr>
<tr>
<td>Tomato</td>
<td>Kg</td>
<td>12.75</td>
<td>11.16</td>
<td>-12%</td>
<td>1,745,773</td>
<td>2,300,101</td>
<td>32%</td>
</tr>
<tr>
<td>Papaya</td>
<td>Kg</td>
<td>7.12</td>
<td>7.49</td>
<td>5%</td>
<td>241,235</td>
<td>339,393</td>
<td>41%</td>
</tr>
<tr>
<td>Pineapple</td>
<td>Kg</td>
<td>6.63</td>
<td>7.38</td>
<td>11%</td>
<td>759,260</td>
<td>555,343</td>
<td>-27%</td>
</tr>
<tr>
<td>Watermelon</td>
<td>Kg</td>
<td>5.58</td>
<td>5.35</td>
<td>-4%</td>
<td>535,403</td>
<td>863,467</td>
<td>61%</td>
</tr>
</tbody>
</table>
## AVERAGE PRICE COMPARISONS DECEMBER 09 VS JANUARY 10 ACROSS THE VARIOUS MARKETS

### Commodity | Unit | NWM Dec 09 | NWM Jan 10 | Farmers’ Markets Dec 09 | Farmers’ Markets Jan 10 | Municipal Markets Dec 09 | Municipal Markets Jan 10 | Vege-Marts Dec 09 | Vege-Marts Jan 10 | Super-markets Dec 09 | Super-markets Jan 10
---|---|---|---|---|---|---|---|---|---|---|---
### ROOT CROPS
- **Carrot**
  - Pack: 2.59 / 3.41
- **Cassava**
  - Kg: 4.66 / 4.97
- **Dasheen (Local)**
  - Kg: 6.52 / 6.82
- **Eddoes (Local)**
  - Kg: 5.31 / 5.86
- **Sweet Potatoes (Local)**
  - Kg: 3.69 / 3.20
- **Sweet Potatoes (Foreign)**
  - Kg: 5.09 / 5.26
- **Ginger**
  - Kg: 25.71 / 24.69

### CONDIMENTS AND SPICES
- **Celery**
  - Bndl.: 0.97 / 0.61
- **Chive**
  - Bndl.: 0.93 / 0.97
- **Hot Peppers**
  - Each: 0.23 / 0.21
- **Shadon Beni**
  - Bndl.: 0.57 / 0.57
- **Pimento**
  - Each: 0.16 / 0.13

### LEAFY VEGETABLES
- **Lettuce (M)**
  - Head: 3.13 / 2.95
- **Patchoi**
  - Bndl.: 3.27 / 3.44
- **Amaranthus spp. (Spinach)**
  - Bndl.: 3.03 / 3.84
- **Cabbage (Local) (Gn)**
  - Kg: 5.58 / 7.15
- **Callaloo Bush (open)**
  - Bndl.: 2.98 / 3.08
- **Callaloo Bush (roll)**
  - Bndl.: 4.00 / 4.13

### OTHER VEGETABLES
- **Bodi beans**
  - Bndl.: 3.92 / 5.65
- **Caraille**
  - Kg: 5.62 / 5.70
- **Cauliflower**
  - Kg: 17.82 / 12.01
- **Cucumber**
  - Kg: 3.65 / 8.52
- **Christophene**
  - Kg: 9.22 / 4.68
- **Melongene (M)**
  - Kg: 4.40 / 5.67
- **Ochro**
  - Each: 0.13 / 0.10
- **Pumpkin**
  - Kg: 2.10 / 2.06
- **Plantain (Ripe)**
  - Kg: 9.97 / 9.87
- **Sweet Pepper (M)**
  - Kg: 7.65 / 7.47
- **Seim Beans**
  - Kg: 9.45 / 9.55
- **Tomato (M)**
  - Kg: 13.31 / 8.89

### FRUITS
- **Dry Coconuts**
  - Each: 2.87 / 2.87
- **Banana (imported)**
  - Kg: 7.85 / 7.98
- **Papaya**
  - Kg: 7.12 / 6.09
- **Pineapple**
  - Kg: 7.27 / 8.71
- **Watermelon**
  - Kg: 6.30 / 5.94

### CITRUS
- **Lime**
  - Each: 0.48 / 0.86
- **Grapefruit**
  - Each: 1.00 / 0.94
- **Orange**
  - Each: 1.00 / 0.97
Building Capacity to Increase Agricultural Productivity

Continued from front page

There is strong empirical evidence that high levels of R&D investments lead to high productivity and eventually, to increased economic performance. The rapid economic growth achieved by certain Asian countries in the 1990s can be partially attributed to the rapid generation of new technologies, many of which found their way to farmers who adopted them successfully.

Transferring Knowledge through Extension

After technological knowledge is generated through R&D, it must be transferred to farmers if they are to use it to innovate. For many years, government-run extension programs offered through the ministries of agriculture have been the main channel for linking farmers to research and increasing productivity in developing countries.

There are other players at the local level who provide extension services in some form. These include NAMDEVCO which provides a range of services to build capacity. Among these services are market information, farm monitoring, seminars, workshops and field schools. All of these contribute to building the technical and managerial capacity of farmers. Other service providers are, input supplier and producer organizations.

However, before farmers can make meaningful demands for agricultural advisory services they must themselves be empowered through the strengthening of their capacity to enquire about how their operations and performance can be improved. This can be achieved through the innovation systems approach, which puts farmers and other operators in the agriculture value chain at the center of innovation and promotes agricultural knowledge spillovers, whereby research conducted in one location benefits people in other areas as information is passed through a series of social networks.

Building Capacity through Non Formal Sources of Knowledge

In addition to extension efforts, there are other ways to build the capacity of farmers by providing them with basic and technical information. There are numerous non formal educational methods; including farmers field schools, radio, television, print media, the Internet, and now mobile phones. Newspapers have been used to disseminate price and quantity information, (Marketwatch) which has helped farmers to sell their produce and make production and marketing decisions. The Internet has become a universal medium for disseminating information. Mobile phones are also a tool for building the capacity of farmers. They provide farmers with access to information—such as market information—that allows them to sell their produce at a negotiated price instead of accepting whatever price they are offered.

Building Capacity to Build Capacity

The innovation systems approach to agricultural development emphasizes the need to nurture the demand for knowledge and technologies among a range of actors. The flow of knowledge between these actors is an essential part of promoting innovations to enhance agricultural growth. However, in order to ensure that this knowledge flows effectively to all participants, it is important to build the capacity of the traditional capacity builders at universities or institutions of higher learning, such as UWI and UTT.

Without the good policy support and capacity building initiatives offered by these universities and other higher-education programs, it may be difficult to develop good policies that will help promote agricultural sector growth.

Conclusion

Agricultural growth cannot occur without new innovations that can increase both the land and labour productivity of farmers. Innovation cannot occur without the creation, accumulation, sharing, and use of knowledge. The involvement of farmers—and other agricultural actors and their networks—in this process is key, and requires building their capacity so they can seek knowledge either in the form of information or new findings and process it into innovations. NAMDEVCO will continue to play its part in this regard.

Adapted from the International Food Policy Research Institute 2020 Focus Brief On The World’s Poor And Hungry