

*Sustainable Urban Agriculture in Cuba*  
*A Fellowship Report by*  
*Karen Chipulina 2006*

*Introduction:*

*“Make human life more rational. Build a just international economic order. Use all science for a more sustainable development that does not contaminate the environment. Pay the ecological debt and not the external debt. Fight hunger, not people.” Fidel Castro (1)*



Fig 1: ‘La Mariposa’

*Aims:*

1. To find out how Cuban people are able to produce food through sustainable agricultural methods despite their country’s unpredictable economic climate.
2. To discover how they manage to feed and educate their population successfully through their various organizations and initiatives.

*Personal Background:*

My background is in the Arts. In 1990 as a postgraduate I won a scholarship to study in Poland for a year. My experiences there helped shape my future and changed the way I wanted to work in order to help people. My stay in Poland also helped me understand the complexities of Cuba and its political situation which as I will make clear in my report proved crucial in my understanding of agriculture in Cuba and its sustainability.

My choice in working in my particular field began when I helped start a sensory garden for the children at my daughter’s school. The idea was a simple one: to get the children to grow herbs and fruit and to develop this activity into an important educational resource.

Throughout this period I was helped by a group of parents who dedicated much of their time both to fundraising and to hard work.

A year later there was a real transformation. The children began to take a serious interest in what was going on and we were able to organize activities for them. Moreover I had discovered a worthwhile activity that I really enjoyed doing and I took the opportunity to volunteer for a local charity called 'Roots and Fruits'.



Figs 2 and 3: 'Roots and Fruits' garden

Within a year of transforming a derelict piece of ground into a productive and creative garden I was asked to work for the organization on a part time basis. I became a garden development worker showing schoolchildren and the local community the health benefits of growing fresh fruit and vegetables. This work has proved so successful that we can no longer accommodate any more schools wishing to come and learn. At present I work with seven schools and nurseries and also welcome volunteers and members of the community. We have had help from the 'Prince's Trust' and have been allocated plots for home learners and a young carers group.

The community in which I work in is an old mining area with high unemployment problems and a lack of opportunities. It also has a bad health record. Diet is therefore an integral feature of the work that we do in our present project. It was from these experiences that I came to appreciate the importance of the Cuban people's work on sustainable agriculture. Their financial problems since the collapse of the Soviet Union have made their ability to grow food and obtain a proper diet a question of paramount importance.

I therefore decided to apply for a grant to visit Cuba and I was lucky to eventually be awarded the Fellowship of a lifetime. I had never been to Cuba but I knew from the Cuban Organic Support Group - who takes organic brigades out to help in Cuba - that it is a country well known for its philosophy of sustainability. Indeed it is probably seen as one of the world's leaders in this field. However, as mentioned previously, this has not been through choice but through necessity.

#### *My Journey to Cuba:*

I planned my trip a year in advance. I knew that Cuba was a difficult place to communicate with via e-mails, yet I needed an invitation from a reputable scientist in the country to allow me access to their gardens. I got in touch with HDRA who helped locate a certain Humberto Rios who is one of the people responsible for a participatory plant breeding programme at the university in Havana. It was thanks to the help of one of his PhD student called Rosa that I managed to obtain a student visa.

I then tried to locate the addresses of the places that I wished to visit. As I mentioned before, the British embassy in Havana with the help of somebody called Melanie, assisted in speeding up my travel arrangements. I had envisaged going on to Mexico but as it turned out there was more than enough work to do in Cuba to cover my stay. In any case I really had no real inclination to contemplate adjusting to yet another country with yet another different economic system and rhythm.



Fig 4: Maize growing in the centre of Havana

#### *Setting Out:*

I left early on the 14<sup>th</sup> of December 2006. I arrived in the evening finding myself in a very noisy country brimming with life and full of people. Our '*Casa Particular*' was comfortable

and it was to here that I would return after my travels to the furthest southern part of the island. Cuba is a big country and it requires five hours traveling to get there from Havana.

It took me several days to adjust to the humid temperature which was a balmy twenty seven degrees. It also took a while to get used to the constant noise. Meanwhile I was determined to try to get to grips with Cuba's historical past so that I could understand her expertise in feeding herself .



Fig 5: The Harbour, Havana

#### *A Potted History of Cuba:*

It seems that Spain, Britain and America have all at one point or another, tried to colonize Cuba. Their main interest in the island was sugar. At the time of Christopher Columbus sugar prices were very high and on his arrival in Cuba he forced the indigenous population into slavery to accommodate the needs of the sugar industry. There were different groups of native Indians living on the Island at the time. The main one was the Tainos who were arable farmers. Columbus mentions in his diaries that they cultivated pumpkins, cassava, corn, pepper and peanuts, as well as tobacco.

Unfortunately slavery became unbearable for them and many committed suicide or tried to run away. They soon became extinct. African slaves were then brought in to replace them. The farming ability of the Indian population was therefore lost and the land was from then on seen simply as a source of sugar and tobacco only. Forests were wiped out and clearance operations turned the island into a vast sugar plantation.



## Fig 6: Sugar plantation

By the time the Americans came along huge fortunes were made in Havana based on the tobacco and sugar. At one time as many as thirty different American companies owned most of the sugar plantations. The rural population was very poor, almost totally illiterate and infant mortality was high. There was also considerable unrest especially by the rural population as many searched for changes in their circumstances.

In 1951 Fidel Castro and his followers, including the revolutionary icon Che Guevara marched into Havana. He immediately set about transforming Cuba, especially in the fields of healthcare, education and food. He built universities and hospitals and handed power of the land back to its people. Much to the annoyance of the United States he effectively nationalized the sugar and tobacco industries. Diplomatic relationships between the two nations soured and the Americans imposed sweeping embargos on all trade.

The Soviet block then became Cuba's ally and offered help with shipments of oil and the payment of high prices for its sugar. When the Soviet Union collapsed in 1991, wheat and other grain imports dropped by 50%. There was also a 70% drop in fertilizer and pesticide products. As Cuba had no fuel to export there simply wasn't enough money to import the food that had previously been supplied by the Russians.

Meanwhile there was an ever tightening embargo. The Torricelli Bill was passed in 1992, barring shipments to Cuba of food and medical supplies by overseas subsidiaries of U.S companies. The Helm-Burton act passed by the Clinton administration then restricted further foreign investment in Cuba. This was an era which Fidel called '*The special period in peacetime*'

In effect this meant that measures which are normally taken only in wartime such as the introduction of ration books and the use of bicycles to conserve energy are still in place today. It was at this juncture that Castro saw the need to convert Cuba into a self sustaining country. It was a difficult thing to achieve in an island with such few natural resources. However he did manage to eradicate malnutrition and set about changing the landscape using organic principles.

*'Organic Agriculture....Does not harm the environment, reduces the role of the middlemen and intermediaries, develops the consciousness of fairness and applies knowledge and an ally of nature and considers the farmer as a cultural and not just a productive unit.'*  
Fernando Fumes (2)

The Government's main priority was to organize the urban population in such a way that it would not need to use transport to feed itself. '*Organoponicos*' were set up in and around the

cities to minimize the transport of fruit and vegetables. I visited some of these. The main farming system used was called 'Agreocologia'.

*'Agroecology is concerned with the maintenance of a productive agriculture that sustains yields and optimizes the use of local resources while minimizing social and environmental impacts of modern technology'* Miguel A. Altieri (3)

*Agroecology emphasizes the interrelatedness of all agro ecosystem components and the complex dynamics of ecological processes - Vandemeer 1995*

The challenge was to discover the most efficient crop, tree and animal combinations that matched the environmental potential of each area. In a sense Cuba became unique in that the government and the community implemented these changes together. The country basically re-designed its system of food production and distribution and this was done in various different ways. Some plots of land were given over to families to cultivate coffee and tobacco. Other plots were given over to groups of workers. Today there are basically three different systems in operation.

1. Co-operatives where the state owns the land but leases it long-term, rent-free.
2. Agricultural production co-operatives set up by farmers wishing to unite small holdings so as to increase production.
3. Credit and service co-operatives which are small landowners who own and manage their land and who sell their produce to the state through contracts, and sell excess produce at free market prices. I met a tobacco farmer during my visit who was doing just that with his surplus tobacco leaves.

Cubans ensure that cheap and free food is available for hospitals, schools and work cafeterias. They ensure that young children, the elderly and the neediest will never go without food. Food is also available to the general public in gardens, markets and cooperatives. While I was in Cuba I saw many small sheds next to local gardens full of produce being sold very cheaply as well as the fruit and vegetables being sold at the markets at very low prices. They were always places close to urban areas so as to limit the use of transport.

Many farmers are trained in the principles of agro ecology. Scientists teach the concepts of recycling nutrients and biomass within the ecosystem. They also teach the farmers how to improve soil quality using manure, as well as the techniques of *vermiculture*, soil biology and the integration of crops and livestock. Many people still remember how their grandparents had farmed before the introduction of fertilizers and pesticides. Indeed one family I stayed with told me how they and all Cubans know how to use the cycles of the moon to understand when to plant. They told me that it is common knowledge never to cut

trees unless the moon is waxing in order that the wood is stronger and does not succumb to pests when cut and dried for building work. It was also a good time for planting root vegetables.

Animals were reintroduced when tractor parts became unavailable and oil imports came to an end. Castro was aware that the excessive use of tractors on soil decreased yields and made the soil infertile as well as causing soil erosion. New types of furrows were invented that would avoid mixing soil layers and thus keep microbes undisturbed yet avoid cutting up weeds and in so doing produce even more weeds. Blacksmiths and harness shops were established to make this new multi-plow.

Below is a synopsis of some of the ways in which present day Cuba is fulfilling its need for food production.

*'Organoponicos':*

One of the Gardens I went to visit was an *'organoponico'*. This can be classified as an area where the soil is not cultivable and is usually based on an urban area with poor or contaminated soil. The whole place is therefore built up with raised beds called *'Canteros'* which are always 1 to 1.2 meters wide and 15 to 44 meters long. The most common crops which are grown seasonally are chard, garlic, peppers, chives and medicinal plants.

This land is worked by a few workers and overseen by a scientist using agrological principles. They might use worm humus or *'cachaza'* which is a waste product from sugar cane. They also use plants such as Neem as solutions to spray on plants to deter pests, as well as biological controls such as bacteria, fungi and beneficial insects brought on by companion planting and crop rotation.

A booklet by the Ministry of Agriculture titled *'Manual Tecnico de Organoponicos y Huertas Intensivas'* is adhered to. It is full of instructions on how to convert an allocated piece of land into this type of garden. All the paths have to be the same size and each bed the same length and size for maximum yield. The government supplies all the seeds and equipment needed and even brings the compost in from the surrounding villages.

The *'organoponico'* shown on the next page is on the outskirts of Havana and is run by Rosa, a lovely Cuban scientist who was very interested in my work here in Scotland with children. She said they had a policy of having all schoolchildren learn and understand food production and the garden she oversaw brought in many children from local schools.



Fig 7 and 8: One of the many ‘*organoponicos*’ in Havana

I also met four or five workers who raised seeds in netted frames to keep the seedlings cool, and then planted them into seed beds. These were then divided and thinned out and put into their permanent beds. Thyme, *tilo* and sweet corn were planted round the borders of the whole garden to deter pests. Marigolds were also planted around the borders.

This ‘*Organoponico*’ was growing mostly seasonal fast growing produce which was cut and sold in a small hut beside the garden. People bought the produce for themselves or for sale at the market. Most of it was quick growing and nothing was wasted. Even the onions were cut and the leaves used instead of the bulbs.

Rosa showed me a well-thumbed book illustrating exactly how everything has to be done when working new ground. Meticulous research by the government has gone into this to get maximum yields from the available space. Generally the garden seemed to function with a minimum of resources. I told Rosa that I would try to send her some books if I could and she in turn would reciprocate with a chart from the Ministry of Agriculture with a detailed plan of all the ‘*Organoponicos*’ in Havana.

#### *Permaculture:*

Another sustainable project that I went to see involved the breeding of Rabbits for sale to restaurants. The person I spoke to was Angel Mena who had once been a lecturer in *permaculture* techniques and now works closely with an organization called ‘The Foundation



of Man and Nature'. These people often organize trips for Cuban organic support networks here in Britain.

His house was fascinating. Just about everything had been made by him. The metal staircase up to his garden roof, his blenders and mixers to mill his dried compost, even the watering butts for the rabbits had been made by him.



Fig 9 and 10: Angel's rooftop garden

He showed me how it all worked. He collected peelings and compost from the neighbourhood and dried it in an oven made from what looked like a metal fridge with a fire at the bottom. He had wire trays which held the compost above the slow burning fire. Once dried and cooled it was kept in large buckets and was finally milled into a fine powder when required. This then formed part of the rabbit feed, along with split peas, bread and corn.



Fig 11 and 12: Angel's workshop showing his drying oven.

The rabbit droppings were taken each week and used for manure by a neighbour in his family forest garden. Coconuts which were also given to him were stored, dried and milled in a special grinder he had designed himself and then frozen later to be thawed as needed when feeding his chickens or rabbits. He also grew some grasses that were both good for the rabbits to eat and full of nitrogen for the soil. Altogether there are 104,000 plots of land and patios such as this one producing 60% of all the vegetables grown in Cuba.

*Vilda and Pepe's Garden:*

I was also taken to see a rather special place run by a couple called Vilda and Pepe. It also formed part of this network of sustainable food growing. This exceptional couple had managed to convert their small back garden into a piece of land containing fruit and nut trees, medicinal and special plants to deter pests as well as fodder food for pigs and chickens.

Vilda showed me around her amazing small office and school garden. She and Pepe have been working for a number of years and have lectured and published many books on the subject of natural preservation.



Figs 13 and 14: Vilda and Pepe's office

Vilda showed me how to dry turmeric and ginger in meshed frames and how they had built a south facing frame from metal bars that could hold drying peppers and other spices at a 45 degree angle to the sun. She told me the the ingredients in the spices get more concentrated as they dried making them even more nutritious. The turmeric had been washed and cut up into small pieces. This was also being done to chili peppers which were then ground to a fine powder.

There were jars and bottles everywhere full of vinegars with different vegetables and books showing preservation techniques using salt, sugar, vinegar, oil, fermentation and the sun. Their books were both detailed and scientific. They gave details on the percentage of water in food as well as food bacterial types and the temperatures at which these various microorganisms could be killed.



Fig 15: Pepe working with spices

Vilda and Pepe have also developed a school garden which was across the road. There they grew herbs such as fennel, American mint, oregano, rosemary and other less well known species such as *Tilo* and *Malanga*. This later plant has huge leaves and is easy to grow but is expensive to buy. They also grew plants that deterred pests of which Vilda made an interesting observation: plants with white flowers deter the cabbage white from destroying brassicas if they are planted close by. Vilda had also planted mulberry trees on the roadside and a bearberry cherry tree which she mentioned having the most vitamins of any fruit. She was delighted that the children picked these on the way to school!

#### *Forest Garden in Vinales:*

This garden was small but full of trees, shrubs, herbs, and other useful plants. It also had sculptures on display. Many of the plants were edible or had other uses. The garden had been planted eighty years ago by an old man. His two daughters had continued his work but were now too old to continue and other people had taken over the job of showing tourists around and explaining the function of each plant.

Most of the plants were tropical but it was interesting to see just how much could be grown in such a small space. There were also pigs and hens and the whole resulted in a completely self sufficient garden.



Fig 16: This is me holding a coffee bean in the Forest Garden in Vinales

*The Herbalist:*

In the very centre of Havana I happened upon a tiny herbalist's shop tucked under the stairway of a block of flats. The owner seemed incredibly knowledgeable and people were continually walking past and asking him for some herb or other to treat their ailments. His customers seemed to trust him and he was obviously well liked. He also had drawers full of powdered herbs some which he gave out on prescription.



Fig 17: The 'Herbalist' greeting me in his tiny shop under a staircase in Havana

Herbal medicine is popular in the island not only because of the lack of conventional medicines, but also because of the religion of '*Santeria*' which is practiced by many Cubans.

Many people I spoke to knew what part of the body particular plants were good for. Some of the more common medicinal plants are *Passiflora* and *Maria* for nerves, *Romerio* for the throat, and *Artemisis* for rheumatism.

### *Tobacco Farming:*

Many local farmers around Vinales grow the best tobacco in Cuba. Most of this is graded and sold to the government and what is left over is sold by the farmer for a small profit. The farmer or '*campesino*' that I met was rolling his own tobacco and selling the cigars individually. He told me that many growers could sustain themselves with this extra income especially from tourism.



Fig 18 and 19: Tobacco farmer and tobacco field

### *Conclusion:*

Since my return I have written an article for 'Reforestation Scotland' and I am in the process of linking up children in East Lothian with children in Havana so that they can swap ideas about food growing. So I am already well on the way to putting my experiences into practice.

However, having been back for a few weeks and having reflected fully on what I saw I have to say that Cuba really gets under my skin. It's as if I had witnessed the future in a sense, the future we are all going to have to face when we can no longer rely on fossil fuels to support our massively technological agricultural system which we in the West and elsewhere depend upon for our food. With hindsight I really think that what I witnessed on this Caribbean island is very important. What has been achieved in what is fundamentally a poor country is nothing short of a miracle.

The more I read the more I am surprised at how the Cubans have managed to feed themselves. They certainly have many lessons to teach the rest of the world on sustainability. If the industrialized world fail on sustainability, despite government intervention, charities and voluntary organizations such as the one I work for or in other areas of life then I really think we are going to suffer the consequences both financially and socially.

Cubans have learnt to adapt and have become overwhelmingly resourceful. They have used their traditions and scientific capabilities to become self-sufficient in all the food, herbs and medicines that they need. All of this is done by and for the community albeit with governmental aid. The people were tolerant and helpful not just with me but with each other and I was often told that even if it was not all that much, no one went wanting in Cuba. I also learnt how much can be achieved with very little equipment.

I will take what I have seen and learnt and will try to apply it to my work. I will also try to be more tolerant in the face of a persistent lack of funding, resources and time and will try to work around ways of achieving whatever I need to do in the places I work in. I will also attempt to enlarge the learning experience of the children I teach. In the final analysis they should learn from the way in which they are taught just as much as from the lessons themselves. If my teaching can achieve something that will instill hope, enthusiasm and a sense of enjoyment then what I teach may be remembered for what it is.

All the Cubans I met seemed quite relaxed in the face of adversity and chaos and that has been the most confusing aspect of my trip. It is only now and in months to come that I will be able to appreciate just how clever they have been at solving their problems. They are not just knowledgeable about the exact size and space to raise a bed for maximum yield. They also seem to behave and live communally not just efficiently but with considerable enjoyment and satisfaction.

*Itinerary:*

15 <sup>th</sup> – 21 <sup>st</sup> Dec	Flight to Cuba Land in Havana Visit herbal chemists Initial contact with Vilda and Pepe Sustainable food production Contact University of Havana.
21 <sup>st</sup> -25 <sup>th</sup>	Visit southern most point in Cuba Visit UNESCO - Forest and coral reef.
25 <sup>th</sup> -28 <sup>th</sup>	Visit Vinales to look at tobacco plantations View tobacco making Visit rural farming methods Forest garden.
28 <sup>th</sup> -31 <sup>st</sup>	visit biosphere ' <i>Las Terrazas</i> '

1<sup>st</sup> -14<sup>th</sup> Jan

Back to Havana

Visit *Organoponicos* in and around the city

Visit Vilda and Pepe's school garden and workshop,

Visit to herbalist and permaculturist.

*References:*

*Altieri, Miguel A.*(3) - University of California

*Castro, Fidel*(1) - Speech at the United Nations conference on the environment and development, Rio De Janeiro, Brazil,1992

*Figuerola, V. y Jose Llama.*1997 'Como conservar alimentos y condimentos con metodos sencillos y naturales.' Havana

*Figuerola, V y Jose. Llama.*1997 'Guia para conocer y ampliar el uso de las plantas de condimento en Cuba.' Havana

*Figuerola, V y Jose. Llama.*2006 'Recetas con sabor.' Habana

*Fuentes, V.*1992 'Conozca las plantas medicinales.' Habana

*Fumes, F.* 2002 'Sustainable Agricul. and Resistance. 'Food first Books, California pp18-22

*Fumes, F.* (2) - 'Sustainable Agriculture and Resistance.' Part I, 2002

*F.N.H.* 1987 Education Manual.' Consumo Sostenible.' Habana

*Gott, R* 2005 'Cuba A new History.' Yale University Press

*Nieto, M* 2002 'Sustainable Agriculture and Resistance.' California. pp49-52

*Rios, A.*2002 'Sustainable Agriculture and Resistance.' California pp156-16

*Rosset, P* 2002 Int for Food and Dev Policy. 'Sustainable Agriculture and Resistance.' California p16

