Workshop Title: Beyond Peak Oil-Lessons from Cuba's Experience with Urban Agriculture

Speaker: Roberto Perez

Executive Summary

In the session, Roberto shared his experience with agriculture in Cuba over the last two decades, explaining the development of agro-ecology in the country. He focused on urban agriculture, looking at the permaculture movement within the city. The key aspects of the system were explained and best practices highlighted. Roberto contends that many of lessons learned in Cuba can be used in other countries to help them move towards more sustainable forms of agriculture.

Detailed Notes

Cuban Context

Cuba is smaller than Newfoundland, Canada, with a total land area of 109,884 km^2. Its population is more than 1 million. Many other islands surround the island.

Sugarcane is an important crop beginning in the country, and one that changed the landscape immensely. Before 1959 more than half of the island was covered in forest. By the late 60s, more than 85% of the forests had been cut due to sugarcane expansion.

In terms of biodiversity, there are 30,000 edible species. However, only 120 are currently cultivated. Three species account for more than half of the food we consume.

Cuba followed a conventional agricultural model from 1965-1991, following Green Revolution practices. The machinery they used was Soviet-style. Excessive use of chemicals, perhaps even more than in the U.S., were applied to crops during this period. In the 1980s, 30 million tons were used.

During these 40 yrs Cuba was an export-based economy, trading tobacco, coffee, sugarcane, citrus. They were exporting lots of toxic materials (e.g. rum, tobacco) and importing most of their food.

The agricultural surface of the country is 6.6 million hectares. The conventional system was very destructive, especially to the delicate soils that are in Cuba.

Changes came in 1991 with the collapse of the East block. The system was forced to reduce high-technology inputs. The embargo changed their practices – having no oil meant no chemicals for production. As a result, productivity decreased by 70%.

There were major reforms after the embargo to address this problem. An important one was the redistribution of land. Citizens were given access to land and resources that enabled them to grow crops, but the government retained ownership to ensure that the land would be used as was intended.

At present, state owned conventional agriculture accounts for less than 20% of land in Cuba. Conventional is shrinking and being replaced by more efficient forms of agriculture.

The moment that agriculture gets detached of environmental concerns, problems begin (e.g. in relation to consumption of energy). Roberto argues that if we tried to combine and make systems more environmentally friendly there is space to bring back the forests.

Soil fertility is good in Cuba at present. The application and production of organic fertilizer is more than 8 million tons per year. This is good for the soil – before runoff was polluting, but now everyone sees the beneficial aspects that this system is producing.

In 1995 the universities incorporated agriculture in their curriculums. They have received various prizes for this initiative. Between 5000-6000 people come to visit from various places each year to learn about their system.

There were 2 main periods:

- 1989 - 1994 was subsistence – growing food for citizens.
- From 1995 to present it became more specialized for the market and consumption.

Decision makers and urban planners recognize their food system as very important for the country. The quality of it has therefore improved. It is now prohibited to use chemicals within urban centers.

The low input and low emission system is also socially responsible - consumers save money through this system.

Geographic outreach – every city has some form of urban agriculture. It's not mobile, but a very comprehensive system.

There are many different types of people involved, including women, retired people, technicians etc. The number of younger people is currently quite small, which is something they are working on to improve.

Another important component is intensive gardens. More than 1 million tons of food is produced from these sources. This mainly includes fruit, root vegetables, and some more staple foods (e.g. sweet potatoes). They also focus on short term crops, scaling different vegetables depending on season.

People have different sized allotments on patios and roof top gardens. These can be family based or collectively run. People work together and share the food once it is grown.

Animals in the city do not cause problems or threats. Life expectancy is 78 years in Cuba; mortality rates are better than in the US. The country was also voted the most sustainable country in the world by WWF in their 2006 report.

Cuba has a totally integrated system between plants and animals. There are more than 100 animal breeds in Cuba. Once the animals are integrated in the system you can use what they waste (e.g. nitrogen in manure, don't have to get rid of wastes on system). Further, animals work in place of machinery on farm. There are different advantages and disadvantages to having them, but the advantages outweigh the negative aspects.

Supporting infrastructure: Some farms that are only in existence to grow seeds, while some places produce fertilizers.

There are 280 specialized seed farms that produced more than 11.6 tons of seeds in 2009. There is a lot of diversity as a result (40 varieties in some cases).

There are more than 7000 centers of compost sites that process 60,000 tons in the city. Their system focuses on reusing, and has a low production of plastics.

Biological controls are important in the system as well (e.g. insects, nematodes etc). It is very important to establish levels of predators prey. In good years only a small application is necessary, but in bad years biological controls can be applied to more than 1 million hectares.

The mandate is to feed people. Food is sold directly to people - you can sell in street. Citizens only have to pay 1% in taxes for urban agriculture, which encourages people to participate.

They also ensure that there is no competition between urban and rural farmers - rural grows more staple foods, while urban does short term production, crop rotation. There is no need for competition and there is a still lot of diversity within the country.

Permaculture principles are used, with the goal of increasing the quality of food. They plan in ways that correspond with environmental variables (temperature, climate, region, etc.). They mix a variety of different animals and plants to create good growing conditions. Urban space creates different environment to grow in. Greywater systems are also essential in this permaculture design.

In 1994 education on permaculture began in the country. Now more than 900 people are trained. There are more than 100 mobile gardens in 6 provinces. Now they are in the second stage, trying to appeal to corporations from abroad to invest. They are doing outreach and collaboration with many different groups around the world. The film "*The Power of Community: How Cuba Survived Peak Oil"* was produced in 2006, documenting their transition to sustainable agricultural practices.

The capacity of agriculture to fix environment problems is very important. For example, composting toilets are part of permaculture practices. Water used in regular toilets is wasteful; composting makes more ecological sense. They save 15,000L of water per person per year.

Ecovillage in Cuba – permaculture training occurs here. More than 3000 trees have been planted. Appropriate technologies have been integrated, saving energy in the process.

The difference is that Cuba was forced to respond by extreme measures. This was a reactionary process. They had no choice but to make it work.

Lessons learned

- Access to land is important instead of ownership
    - Once you have property you have right to do what you want with it. Instead of this they gave access to land, not ownership.
- Small scale intensive pattern
- Fair market for producers
- Need for local economy processes
- Link science with production
- Political will and support
- Diversity of food system - not all in one basket.

The system does have challenges. There is room for perfection and improvement. One important aspect for countries is the need for farmers – there is always a need for new farmers.

Cuba does not have a system for certification. When people want the certification, the buyer brings the certifying body to them.

Roberto asks, "Why do people who are doing what's right have to prove themselves? It should be simpler, people use chemicals or they do not".

GMOs are not the answer and should not be used in his view.

There is no single solution or answer to the problems associated with agriculture. We have been told that there is only one way (the chemical way) but this is not the case. We must learn from others and take what works. There is a need to show that their way of doing things is 'sexy' - creating culture, impacting people, and persuading people to change.

Their system has proved that multi-stakeholders can work in producing a sustainable food system.

Question: What were some of the most successful ways of communication besides what was presented?
Answer: Horticulture clubs were important. People in these clubs have another employment but also involved and collaborating. They allow everyone to work together – use of trucks, tools, etc. Learning to share is key. There has also been a lot of different groups doing work with farmers. The idea is to try to bring more horizontal way to system – everything is for the collective. There is a strong system of extensions, where people go out of their communities to give advice (groups in every region go and help, give advice to farmers). Farmers are also very proud in Cuba. There is recognition that farmers provide food for society, which is an essential commodity for life.

Question: Is the education system involved in agriculture?
Answer: Yes. In secondary school, classes stop for 1 month and students go to field to learn. Therefore in grade 10 kids are starting to learn things related to agriculture. Students learn more about biology and integration, and agro-ecosystems as well. They take an interdisciplinary approach.