



Urban Gardening & Organic Farming

Cuba - from surviving to thriving?

Havana ,and Cuba in general, are changing politically, economically and socially in a worldwide unique way, what gives us the rare opportunity to study this process and bring it into context with our knowledge about design. Driven by pressure from inside and outside, the country is transforming from a socialist to a market economy which affects the country and the people in many different aspects.

In our subproject "Urban gardening and organic farming" we examined the unique way of cuban agriculture and in which way it has changed and will change. Because of the economical crisis due to the collapse of the Soviet Union in the early 90's, lack of machinery oil, synthetic pesticides and fertilizers forced Cuba to adapt their agriculture nearly fully into organic farming. Nowadays still over 70% of Cuba's food production comes from organic farms and urban gardens. This brings a lot of advantages for the environment compared to the western monoculture, but it also brings many challenges for agriculturists and the society in general. Our goal as young designers is to ask the right questions and find answers to them and as we do this, protocol our progress and display it in a comprehensible way for outstanding observers. With our exhibition we want to bring you closer to the topic and encourage you to rethink the way we produce and consume our food.



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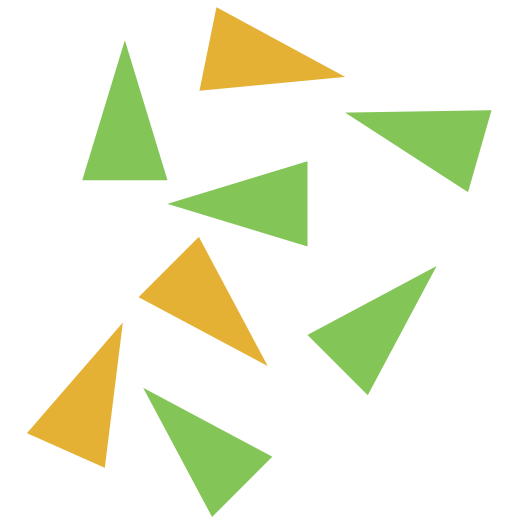
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urban gardening

Urban gardening is the small space, horticultural use of urban areas within residential areas or in the immediate vicinity. The sustainable management of horticultural crops, environmentally friendly production and the marketing of agricultural products are some of the main aspects. The interest for urban gardening increases rapidly in the last years. Urban horticulture activities are increasing globally with at least 100 million people involved worldwide.

Global food production faces great challenges in the future. Through rising urbanization, decreasing arable land, and weather extremes due to climate change, global agriculture is under pressure. Currently, agriculture accounts for around 20 - 30 % of global greenhouse gas emissions. Shifting food production to locations with high demands reduces emissions and mitigates climate change. Urban horticulture increases global food production by exploiting new locations for cultivation. The vegetable production is the most significant component of urban food production which contributes to global food security.

The common cultivation system in Cuba is called organoponic. The fields are raised with a mix of soil and organic matter. This practice is mostly found where soil fertility is low and chemical input is missing. Because of Cuba's lack of infrastructure and access to fertilizers and other inputs it makes it a suitable system. Organoponic is especially promoted by government officials in Cuba which is why both the yield and the area of this cultivation method have increased. The system is used for self-consumption as well as for schools and hospitals. This particular way of farming is extremely sustainable as it operates without fertilizer and is clearly linked to ecologically friendly practices. Cuba is the world leader of this practice. However, it has not yet spread to other countries on this scale. With its environmentally friendly and extremely efficient approach, it is highly suitable for urban horticulture, and its broader adoption should be further considered.

historical context



Cuban Republic (1902–1958)

In the beginning of the 20th century about 45% of land was owned by only 1,5% of cubas farmers, very wealthy and powerful landowners, so called Latifundistas.

The agriculture in Cuba was orientated mostly toward growing and exporting cash crops, like sugar cane and tobacco, which was the largely exported to the United States of America. Other than that vast areas were used to raise livestock. This model was mostly funded by the United States and foreign companies.

Although from the 1940's onward farmers in the US experienced an agricultural revolution, Cuban farmers were restricted to traditional and organic farming.

Land Reform and COMECON (1959–1991)

Following the Cuban revolution the state nationalized most of its farmland from the Latifundistas. 70% of arable land passed from foreign companies to the government, which then distributed it to local farmers. Despite the land reform Cuba didn't manage to reach its production goals and the US embargoes caused even more obstacles for the government and the society to overcome.

1973 Cuba joined the Soviet Union and other eastern bloc countries in the Council for Mutual Economic Assistance (CMEA or COMECON).

After joining the COMECON more than half of Cuba's arable land was dedicated to export goods of cash crops (sugar was bought by the Soviets for five times its market price). The Soviets provided Cuba with 63% of its food and 90% of its petrol. In this period more than a million hectares of land became degraded due to overuse of pesticides and fertilizer (more use than the US). This led to even more use of chemicals to keep up production levels.

The Special Period (1991-2007)

The collapse of the Soviet union cut off Cuba's agricultural sector from its principal export market and supply of fuel, pesticides and fertilizer. Due to this circumstances production fell by 54% till 1994 which caused a nationwide food crisis. Most state programs failed to compensate this difficult period. As an answer to this the Cuban government aimed to strengthen biodiversity and put focus on small farmers.

In 1994 the government allowed farmers to sell their food directly to the community for the first time for decades. Due to the lack of chemical fertilizer and pesticides, as well as fuel for machinery, agriculture in Cuba largely turned organic.

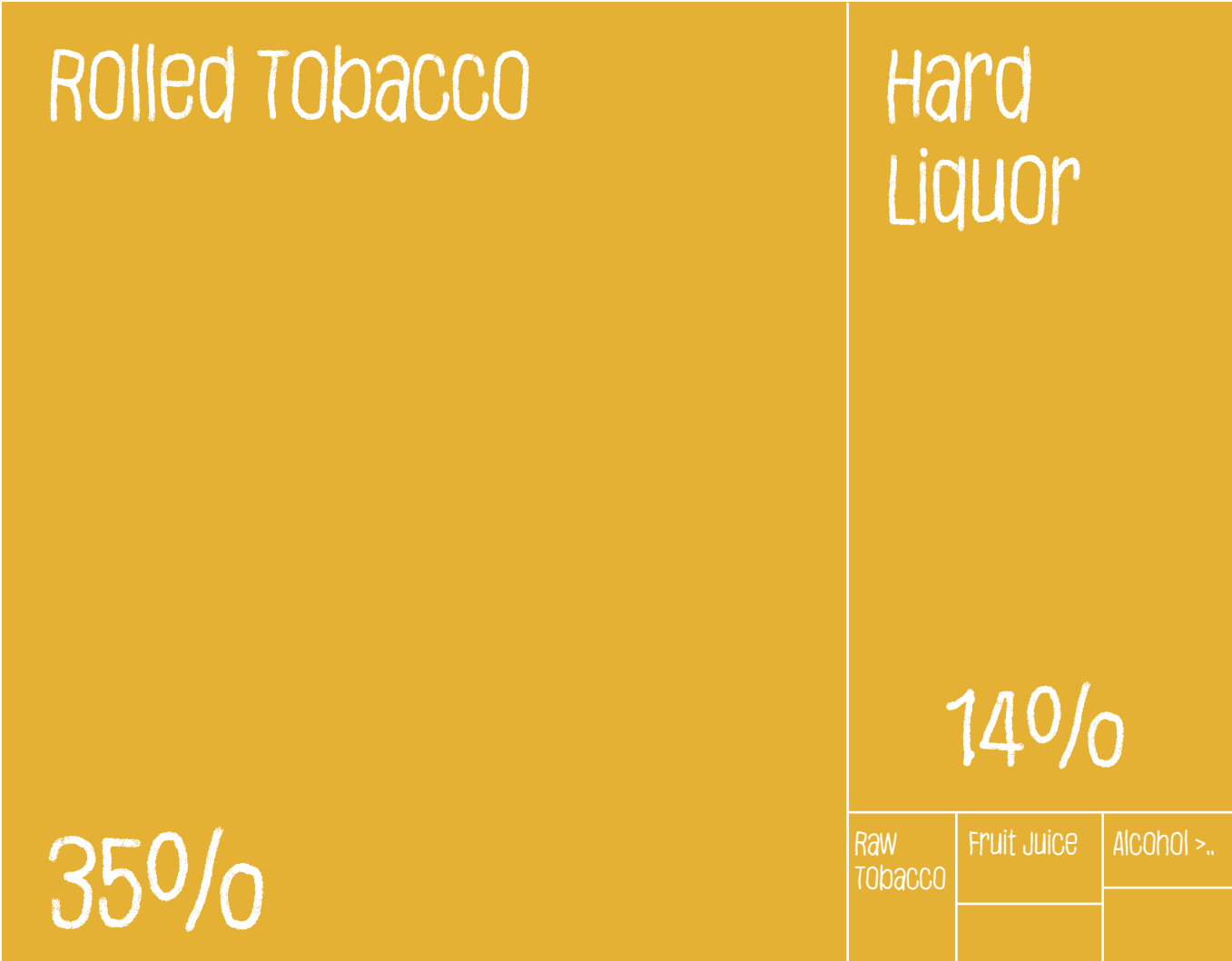
Organoponicos (today)

Today agriculture contributes less than 10% of Cuba's GDP, but employs about 20% of working population. About 30% of land is used for crop cultivation. Cuba imports about 70-80% of the food its people consume and 80% of the food it provides via the rations to the population. Its biggest exports are still tobacco and raw sugar.

When Raul Castro assumed the presidency in 2008, he set about enacting major transformations to Cuban agriculture. One crucial policy was put through. From now on the State-owned land could be used by companies and private farmers. The government even gives the land away for free, only demanding small taxes on the sold food to encourage people to become farmers. Even engineers, doctors and other academics are starting to work on the land to overcome the ongoing food shortages. By now nearly all the fresh produced food in Havana comes from local urban gardens.



Cubas Foodstuffs Export (2016) – Total of \$751M



Cubas Foodstuffs Import (2016) Total Of \$1.09B

Corn	Dried Legumes	Rice
16%	6.4%	4.6%
Wheat	Soybeans	Malt
15%	4.4%	1.0%
	Coffee	
	2.5%	

Soybean Meal	Beer		Sausages		Baked Goods	
	4.7%		2.6%		1.8%	
	Other Edible Preparations	Processed Fish	Sauces and seasonings	Other Prepared Meat	Chocolate	
12%	1.3%					
Animal Food	Wine	1.1%	1.1%	1.0%	1.0%	
	1.2%	Hard Liquor	Cocoa powder			
	Malt Extract					
	1.2%	Confectionery				
	Flavoured Water	0.8%				
		Other Processed				
	9.2%	1.2%				



research results

While we've been to Cuba we did a lot of case studies. We visited urban farms all over the country and took interviews with the persons running them. We've made great experiences about the possibilities of urban farming, the field of use, methods and which dimensions it could take to supply whole cities.

Interview with Isis Maria Salcines Milla

Location: Vivero Alamar

Q: Thank you very much, Isis, for giving us a tour of your beautiful organic farm and showing us everything. We are really interested in the topic and an interview with you would help us a lot! Let's start right away with our first question, if you don't mind. Is organic farming the usual way of agriculture here in Cuba?

A: I'm more than happy to answer you some questions and it's great to hear that young students as you are, show interest in work we do here. Yes, at least 70% of the agriculture in Cuba is organic, due to the shortages of fuel, pesticides and fertilizer after the collapse of the Soviet Union. We are really proud about the way we grow our food here.

Q: That's a lot! Do you still manage to grow a big diversity of vegetables and fruits, even with the limitations of organic farming?

A: We do. On about 11 hectares we grow mostly salads and greenery, like mangold, mint, beans and other things like aloe vera, sugar cane, different fruits and much more. My father, who is the

founder of this place, used to say, that in Cuba it's more profitable to grow salad than marijuana, because of the shortages of vegetables.

Q: You grow a surprisingly big variety of food and a very interesting point your father made there. But it must be hard to keep all those plants healthy without conventional methods of monoculture. Which methods do you use to protect your plants from insects and keep them sturdy?

A: This farm was founded nearly 30 years ago, so we had a lot of time to bring our methods to perfection. Over time, we have found many various ways of protecting our plants from insects. For example - we are growing particular plants like corn around our fields to attract the insects from the fields to those plants. Other plants attract ladybugs which then eat the dangerous insects without harming the crops, and we even have a small laboratories where we breed particular kinds of insects that behave similar to the ladybugs. We also use self-made fertilizer from our horses and bulls and even have a rabbit farm to collect their dung. Other methods are worm farms where we



create humus to have fertile soil on the fields. A good technique is to create small ecosystems with selected plants and crops which then sustain themselves. Of course we have many more methods to make sure our plants are okay.

Q: That sounds like you put in a lot of effort in figuring out the best methods. Besides thought-through systems of growing you need, of course, land to grow your crops on. The land was given to you by the government for free is that right? In which ways do you have to repay them?

A: Yeah that's right. The Cuban government supports organic farmer in giving them land to harvest on without demanding direct payment, because they want to encourage people to become farmers. Many citizens move from the country to the city nowadays, so the government tries to make it more attractive to stay and grow food. For the land they gave us, the government de-

mands 5% taxes on all the food we sell. Besides, we have to sell 10% of the food we harvest to restaurants and hotels, which are mostly owned by the state. Another way the state profits from us are some of our animals, especially the bulls. We have to buy them from the government when they are young, and they work on our fields for about 2 years. In this time they get strong and trained from the work and then we have to sell them back to state for a low price so they can use the grown and fit bulls for other purposes. From that point we get new young bulls.

Q: So how much influence does the state has on your farm?

A: Well, their biggest influence is that they sell us the seeds and decide what we can grow. Other than this and the things I just mentioned we are quite free to run our farm the way we want to.



Q: It seems to us that you found lots of ways and innovations to keep your farm running smoothly and profitable. Nevertheless, Cuba suffers from fruit and vegetable shortages and has to import most of its food. The reason for that is mostly the low productivity of organic farming and the unsatisfactory amount of farms. Still, organic farming saves biodiversity and keeps the soil fertile. Without it most of Cuba's land would be already destroyed. In which way do you think will the opening of Cuban economy to the global market effect food production here?

A: It's hard to say, but in my opinion Cuba is in a state of stagnation. There won't hardly be much change in the agriculture, because there's no money to establish mass monoculture or different ways of farming and I'm actually happy about that. We have to improve, but have to stay on the path we're going on at the moment.

Q: And what's about organic and small farm innovations like for example aquaponics or the small modular tractor Òggun?

A: Unfortunately there is no money for that either. On the other hand our farms are built to be worked by people and animals not machines.

Cuba is in
a state of
stagnation
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It would be too much effort to change everything around for other ways of farming.

Q: One last question Isis: Organic farming has many many advantages for the environment and the quality of food compared to monoculture. But if monoculture would be establishable in Cuban agriculture, do you think the farmers and the consumers would stick to organic farming because they know the advantages and they do it out of commitment?

A: I think most of the farmers are proud about the way they do their job and they value the environment. The problem is the aspect of money. Most of the consumers buy the cheapest product because they don't have much money. So food grown with monoculture would have a bigger market, which then forces the farmers to switch to the more profitable way of agriculture. It's really hard to foresee what's going to happen, but I hope for the best and we're working on contributing our part to it.

Thank you very much Isis. This was a great interview and very interesting tour. You do fantastic work here and we wish you just the best and even more success. Let us hope that people in Cuba and around the world will learn from you!



Interview with a kindergarden teacher

Location: Kindergarden in Havana

Q: Hello and thanks for having us. As we saw from the street, you have quite a few growing patches in the back of your yard here in the kindergarden. Why do you have them and is this a regular sight here in Cuba?

A: Well this garden is more of a personal project by us teachers and the kindergarden management. We decided to do this so the children learn where their food comes from and how it is grown. So unfortunately this is not the standard in Cuba, but the state provides all the seeds we use to support us.

Q: Do you use organic methods to grow the food?

A: Yes, we do. On the one hand we don't have many other alternatives and it also could be dangerous to have chemicals in the soil while the children are playing next to it. But on the other hand we support the benefits of organic farming and want to encourage people and the kids to use it.

Q: Are the children taking care of the garden?

A: Due to complex process and a few dangers while taking care of the plants we can't let the children do the growing themselves. But we have a gardener and the kids always see and observe him while he's working. They also help him harvest the food.

Q: Please allow us one last question: What kind of food do you grow here and what do you use it for?

A: We grow mostly herbs and spices for preparing the food for the children. But we have also onions, spinach and other vegetables for diet and health reasons.

Q: We are really thrilled by your projects and think it's a great opportunity for the children. Thank you very much for your time!

We don't have many
alternatives

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Interview with Angel

Location: Organoponico Plaza in Havana

Q: Hello Angel and thank you very much for giving us this interview. You are the manager of this farm. It is the biggest urban garden in Havana and it looks like an impressive place. How did you manage to grow so big and what part plays the government in this.

A: Well first of all we are in this place for over 21 years with the exact workers. We had lots of time to build this place up. Some of us even travel to other countries to teach foreign farmers our techniques. The government gave us the land to work on. Actually it was Raul Castro's idea to grow food in the middle of the city so we wouldn't have to pay that much for transport from outside the city and risk the food turning bad. We pay all the money we earn into a bank account of the state, which then pays all the workers. Also, we get the seeds from the government.

Q: Very fascinating. As we saw you grow all kinds of vegetables and some fruits, all managed by human power. In what ways do you think could you improve over the time and how do you think will the economical transformation of Cuba affect you?

A: I don't think there'll change much about the way we are farming here. It works quite good and it's way cheaper to let humans work then to let machines work. And the workers here need their job to survive. What we actually need is way more farms like this to cope with the need of food we have.

Q: Thank you for your time and the answers you gave us!

After the interview we asked if we could buy some of his tomatoes. He gave them to us for free and said: Cuba always gives, but not always receives.



conclusion

As Cuba shows, organoponic and other low-input systems will continue to play an important role for a sustainable and secure food production in the future.

Despite the resource efficiency of indoor farming systems, which are developing fast, they are still very expensive, and for that, unfortunately no current solution for Cuban agriculture. But as we see, integrating urban horticulture into educational and social programs, improves nutrition and food security.

New technologies in horticultural research need to be adopted for urban horticulture to increase future efficiency and productivity. To enhance sustainability, urban horticulture has to be integrated into the urban planning process and supported through policies. However, future food production should not be “local at any price,” but rather committed to increase sustainability.

The very difficult circumstances Cuba faced in its turbulent history forced the country to improvise and adapt their way of life many times. Its unique agriculture helped to overcome periods of big deficits and turn down impending famines, while keeping a high biodiversity and soil fertility. Unfortunately Cuba is in a state of stagnation due to political and financial instability. Its future is uncertain and depending on changes from inside and help from outside. Western high-tech innovation for agriculture are too expansive and have no place in the established way of farming in Cuba and so the society has, yet again, to improvise for a better future.

If it's going to keep its exemplary agriculture also depends on the consumer. Will they keep on buying organic food when the market of Cuba opens up to the rest of the world or will they change to cheaper monocultural grown, if given the chance, and repeat the mistakes we already did? Only time will tell, but as we found out in our research there are very promising and courageous projects, institutions and people, who will do their best to contribute to a good outcome.

All in all we can learn a lot from Cuba. While it overcame difficulties not many societies would have mastered, the people kept their responsibility for their environment and conviction on their way of living. The monocultural methods we use to grow our food have big impacts on biodiversity, soil, quality of our food, our health and the environment in general. We, as the consumers, have a responsibility to buy and consume our food in a reflected way, so future generations don't have to suffer from our obliviousness. There should be much more informing and educational advertising from the side of government and other institutions to clarify the problematic and importance of this cause for the society. As a method of displaying this urgency and relevance we thought of a design-critical way to show consumers what they are buying and which consequences it has on the environment and their health. Similar to the health warnings used on cigarettes and tobacco we created warning messages for food packaging, which you can see on the following mock-ups. Consume your food responsibly!





