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SYSTEMAGINATION

The ZERI Foundation's Monthly Newsletter

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Zim IFS

By Margaret Tagwira

Developing countries that are seriously affected by HIV and AIDS, especially in Southern Africa, are at a crossroads. My country, Zimbabwe, is one of those most affected. AIDS is killing people at a time when the region is experiencing unprecedented droughts and food shortages. The disease has resulted in many children to be left as orphans and ten percent of Zimbabwe's population is now orphans.

Around 19% of the population is HIV positive and of these a high percentage are suffering from Aids. Those affected are mainly of the breadwinner and food producer age group (15-45). Both orphans and Aids patients tend to be food and nutrition insecure because: they are just too young to be productive, they lost their parents before they were socialized into food production activities, or they are ill so are not able to perform all that is necessary to be food and nutritionally secure. The resultant suffering at family and individual level together, with other factors overseas, has also thinned able workforce in the country through massive workforce loss and brain drain.

It was against this background that I wrote a proposal to Zeri that sought to train orphans in integrated farming system (IFS) where the farm can be a "one stop shop" that could provide all sorts of necessities to a family in a sustainable way. The need for sustainable agriculture through integrated farming in Africa and the whole world cannot be over emphasized. The era of food insecurity and hardships is now with us. We need to realize that the earth is not going to continue giving of itself and we need to stop irresponsible use of its natural resources.

The original boys that started the project with Margaret and Gunter in February 2007.

This project seeks to teach orphans to be both responsible and productive. It seeks to give orphans opportunities to adopt and transfer correct information. The project sees orphans as spearheads of change as they internalize sustainable development and transfer it from orphan to orphan.

On a personal note, the project was aimed at helping my family, and myself, to stay in the country and not run away like most of our peers have done. I figured that if I worked on a project that I am passionate about, which involved formulating and transferring technologies to the people who needed help most, if I saw myself as part of a solution and not part of the problem, if I did not see myself as a victim but as a player in the system, and if the project helped me to be financially secure-while helping orphans to be economic self sufficient - then that would be the place I would rather be more than anywhere else in the world.

Therefore, when Zeri agreed to fund this project, the project most of us involved passionately call Zim IFS, was born in January 2007. Four orphans were selected from the

What is ZERI? By Julian Bomert – PhD Student in Sustainability Education

The ZERI Foundation is dedicated to promoting systems thinking. It initiates, facilitates, and links people and their projects all over the world. Systems thinking? We aim to understand these network patterns and moreover to transfer that scientific insight – dreams - into applied industrial, economic and educational approaches - reality. Imagination? - creates reality. We aim to imagine a sustainable future.

same community and started setting up the IFS under my leadership and motherhood from February 07.
The IFS involves ducks and geese that are kept in an enclosed cemented pen with two ponds. The cement slopes towards the ponds to ensure all dropping end up in the ponds. The ponds are on a raised platform to enable siphoning of fertilized water into the vegetable garden. The vegetable garden has round sunken beds designed to capture all the water and nutrients siphoned into them. At the center of each bed is a papaya tree, which will capture the nutrients and water that go beyond vegetable roots.

At the edges of the site are rabbit pens that house both rabbits and guinea pigs. These are fed vegetables from the garden supplemented by rabbit pellets. The rabbit droppings drop directly into a trench that has been seeded with earthworms. Earthworms feed on the droppings and the idea is that earthworms will be harvested to feed ducks, geese and chickens completing the nutrient cycle.

The farm grows grain amaranth, which produces a lot of biomass that is mixed with other farm Stover and used to grow mushrooms. Some of the highly nutritious amaranth Stover is also used in producing rabbit pellets.

Since there was need to initiate some of the buildings, improve and/or expand on other existing structures, this first group of orphans have had invaluable experience in many skills including building and welding. They are now all able to grow mushrooms, look after rabbit's ducks and vegetables. They are excited to be involved in this project and they have bonded as a result of their staying and working together.

How we intend to proceed: The project is still in its infancy but we already know that we would like to turn rabbit skins into leather and leather products giving the children an opportunity to learn many skills in value addition that can be used on the farm. We intend to embark on the pig- chicken system in which the waste is used to produce bio-energy before proceeding to a fish and algae pond. This will be done as soon as George Chan or a person recommended by him comes to help with the setup.

We also intend to work towards dairy cattle in which orphans learn to make cheese yoghurt and fermented milk as some of the many ideas that I still have for the place. We would like to produce starting materials for all the projects that we embark on so that trainees can get started without problems.

To read more about Margaret Tagwira and the history of her work in Zimbabwe please access the ZERI website or email laura@zeri.org.

Irno Pretto Integrated Farm System (IFS)

By: George Chan

Let me tell you the whole story behind the Irno Pretto Integrated Farm in Brazil. It is Saturday night, and to-morrow I can sleep late. So I am just in the mood to reminisce about a project I did with love and care, when I thought I was in good health and spirit at the age of 77. It was also the first time I fell ill while on mission, and I had an angioplasty operation there.

With Alexandre Takamatsu and his dedicated team at TECPAR (Technological Research Institute of the State of Parana), after I ran a short course on Integrated Farming Systems for them, I visited a farm belonging to Mr & Mrs Irno Pretto in Toledo in the State of Parana. They had 250 sows producing about 5,000 weaned piglets yearly for a big firm named SADIA, which then supplied

The group at the training with George Chan.

Latest News:

New ZERI Headquarters established at the World Conservation Union (IUCN) in Switzerland. There is one permanent staff member, Laura Riddering, and one rotating position of 3 to 6 months. Julian Bomert has been working there since April and will be taking the knowledge gained to a project in Thailand, called the School for Life, in August.

New ZERI Colombia office established in with Karem Paola Jimenez Morales managing work from education to the expansion of Gaviotas.

New ZERI Pan Pacific office opens and is based at the Restoration Group in Tokyo, Japan. Naoko Iijima is managing various projects. Read more at www.zeri-pp.org

New ZERI Germany branch opened officially with a launch on June 4th. The office will ambitiously focus on the ZERI Education as well as on different ZERI projects. Read more at: www.zerigermany.de

Marubol, the largest publishing house of children books in Korea confirmed that it will publish the 36 Gunter's Fables into Korean.

Latest News:

The Masters course at the Politecnico di Torino has finished courses for the semester. The first groups of students, undertaking the Masters of Integrated System Design, have completed all their course work and will be writing their theses over the next few months.

A new project called Nature's 100 Best ™ has begun with the cooperation of the Biomimicry Guild and UNEP. The project will research and rank 100 species with designs that can create technologies to change the face of humanity.

The ZERI Foundation, Biomimicry Europa, UNEP, the IUCN and the Botanical Gardens of Geneva held a roundtable event at the Sustainable Development Fair in Geneva about the new role of conservation.

Amelia Terrapin, a ZERI practitioner, has taught the first dance course to youth based on teaching the scientific principles in Gunter's Fables.

Chido Govera a young woman from Zimbabwe went to Colombia in April to work with people growing mushrooms there. She was able to share her expertise that she has learned from Margaret Tagwira with many people.

those piglets to many farmers for grow-out during six months, with feeds and prophylactics supplied to them. Then SADIA collected the pigs, and paid a fixed price per head, for SADIA to slaughter and sell the meat locally and overseas, especially in Europe where the prices were very good.

SADIA's slaughter house had a fully conventional treatment plant for the wastes that was working satisfactorily, with the treated effluent discharged into a river. It also had a costly grease separator, followed by coagulation, and the treated solids were disposed of on lands. These operations cost much money, with no returns to SADIA. Many efforts were made by SADIA to cut down these costs, so they were ready to try my innovative processes such as Digesters, Basins and Ponds.

The farmers operating the grow-out for SADIA were not treating any of their pig wastes, which were just washed into earthen ponds and sometimes spread on land, but they were running short of space. So SADIA was prepared to help Irno Pretto to do something about treating the wastes differently. It was a good opportunity for me to design an integrated pilot system there.

I first built a Digester of 50m3 with steel plates for the primary treatment of the Organic pig wastes using the Anaerobic Bacteria naturally present in the intestines of humans, pigs and all warm-blooded animals, as Brazil produces its own steel, so the latter is relatively cheap. Unfortunately, it will rust with time, so it had to be painted with protective paint. It was commissioned in June, winter in that part of the world in the southern hemisphere, but the BOD (biochemical oxygen demand) Reduction, which is a measure of the treatment from the digester, of 60%. However, by November the efficiency shot up to 90%. There was a good production of BIOGAS, which was stored separately in synthetic rubber bags, in the form of a sausage, as it was used as fuel for an electricity generator.

The digested effluent was further treated in shallow basins, where natural ALGAE (Chlorella) grew and produced Free Oxygen by photosynthesis to treat more Organic wastes by Oxidation, with another BOD Reduction of up to 30%. The oxidized effluent, up to 90% treated, was discharged into large and deep Stabilization Ponds, where Natural Plankton grew prolifically for Polyculture of FISH, raised as FEED and/or FOOD. The beauty was that if the plankton-feeder kinds of fish were used, then there would be NO need to purchase Artificial Feeds.

So instead of just spending money to treat the livestock wastes, as was done at SADIA, the integrated farm of Irno Pretto produced its own Biogas FUEL, Photosynthetic OXYGEN, Planktonic FEED, and Organic FERTILIZER to make the farming operations self-reliant as well as eventually self-sustaining.

SADIA also asked me to take a look at their Research Station to see what kind of improvement I could suggest. Unfortunately, Alexandre Takamatsu had to rush me to hospital for the angioplasty operation . . .

One year later, Irno Pretto increased the number of sows from 250 to 400 to produce up to 8,000 weaned piglets yearly. They duplicated the Digester, with a total capacity of 100m3. In 2004, the Bank of Brazil, paid for a ticket for me to visit the Irno Pretto Farm among a dozen of them in the State of Parana and Rio Grande do Sul, when I saw the second Digester.

Later on, TECPAR helped another big farm of pigs and chickens to establish an Integrated Farm for the Meneguetti Family, with a steel digester of 100m3 with the respective basins and ponds.

Just recently, a British photographer went to Irno Pretto Farm to make a film that was projected at the 8th International Permaculture Conference. His remark was that George Chan did not realise what beneficial changes he has made to all the farming operations.

What a hell of a story!
Indeed . . . George

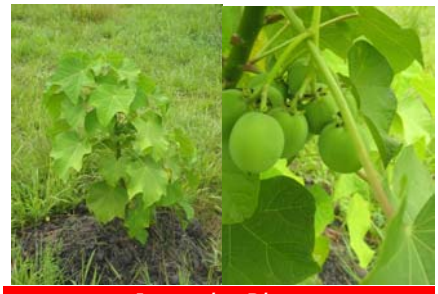
Update from the Founder

By: Gunter Pauli

From the regeneration of the rainforest to a MegaProject to inspire the world

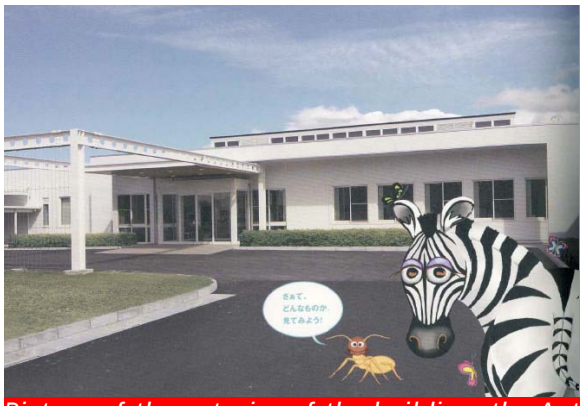
On April 28, 2007 Paolo Lugari lead a team of visitors to the first *Jatropha curcas* plantation in Las Gaviotas, Colombia. Imagine – this project that pioneered the regeneration of the rainforest in the savannah has embarked on an ambitious program to produce biodiesel. First Gaviotas surprised the world with the making of efficient solar water heaters. These were installed in over 70,000 units in social housing throughout Colombia. Then it took the world by surprise by planting a monoculture of pine trees that regenerated biodiversity, moving from 17 plants in the savannah to 256 species in the new forest.

Unlike the majority of initiatives for biodiesel, which plant African palm, soy, or sunflowers, Gaviotas identified embraced the *Jatropha*, which is after all a native species to the region. A team from Gaviotas went around the region and collected seeds and planted the first bushes. Six months later they are already bearing fruit. It is like a dream come true. The expansion program moving from the pioneering experience of 12,000 HA to 100,000 HA saw the investment costs reduced overnight with the elimination of palm at the core of the biodiesel strategy.



Jatropha Plant

And that is not all. Those who had observed the airship in the large mural painting in Gaviotas now can see the zeppelin with their own eyes. The first challenge is to go beyond what people think is possible. Second is making this happen and third generate a sustainable resource.



Picture of the exterior of the building, the Ant says: "Let's go inside and see."

From bamboo as a building material to the design of schools

On April 5, 2007, Daiwa House inaugurated the second building in Japan using the national air conditioning system that was promoted as part of the biomimicry initiative. The first office building integrated the concepts of natural air conditioning we learned from the termite and the zebra. The termite always maintains the same temperature inside its nest. And the zebra evolved a skin cover of black and white stripes. This is an outstanding interplay between areas that reflect the heat (white) and thus are cooler, and areas that absorb the heat (black) and thus are hotter. The difference in temperature creates a difference in air pressure which leads to wind and a cooling of the surface.

The bamboo experience put the foundation on a track towards green building. The new school designs for California put the health of the children as the main target. By doing so energy consumption is way below the level that qualifies for the LEED Platinum Award for architecture in the USA. This is the systems approach where one considers all that is locally available, all that could be locally achieved and then is able to make a difference. The interest in bamboo grew from Colombia, and now implemented projects span Europe, Latin America and Japan. And it only has just begun.

Upcoming ZERI Events:

Teacher Training at Cambridge College in Boston, MA, USA
……July 25

Conference with Gary Liss in Los Angeles, CA, USA
……July 29

Teacher Training and Science Breezer in North Hills, CA, USA
……July 30 to August 4

Updated UpSizing Book Launch in Paris, France
……..October 6

Book Launch in Santiago, Chile
……October 17 & 18

Bioneers by the Bay in Marion, MA, USA with the launch of Nature's 100 Best ™
……..October 19 to 21

The Peace Museum Chicago, IL, USA
…….November 7 & 8

International Congress on Slow Food Conference in Puebla, Mexico
…….November 9 to 11

4th International Conference on Environmental Education in Ahmedabad, India
……November 26 to 28

If you would like more information on any of the items included in this issue or wish to submit an item to future issues, please contact laura@zeri.org.
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