

## EL SAUCE SECONDARY SCHOOL RAINBOW ORGANIC GARDEN PROJECT

Written by Profesor Cástor Artiga and Brenda Carpio and translated by Eddy Brooks, El Salvador

As part of the Action Plan for the Rainbow Minifarm Project back in 2010, we focused on children to see if exposing them to gardening could be more effective than working only with adults. For the educational component of the project, the children would be excellent to expand the knowledge behind organic agriculture and environmental sustainability. So the organic garden project at El Sauce School, started in February 2010, aiming to teach children a more environmental suitable method for agriculture, also to use the garden as a healthy source of organic food for the children, and finally to have an academic cross over into the school curriculum. The school could act as a model for any other educational institution in the country.



El Sauce School is a government state school in Sonsonate, El Salvador with 1600 pupils divided in 2 daily shifts, kindergarten, starting at age 4 to ninth grade, age 16. Our organic garden is using nearly 800 sq. meters of once derelict school ground. Our students transformed the land that now is used for compost area, vegetable beds, mandala, a water system, a green house, vermiculture, and native plants seed bank. The importance

of the organic school site is based on:

- ◆ High quality nutritional vegetables recommended by the ministry of education for the school kitchen.
- ◆ The rescue of lost moral values through working on the land and care of the environment. (El Salvador has one of the worst teenage gang cultures in the world.)
- ◆ The pedagogy and culture of the garden is seen as a tool for the prevention of violence and anti social behaviour.
- ◆ The garden is an education tool for cross over curriculum work as well as mixed ability and child centred learning.
- ◆ The garden is an educational model for other institutions, which is already seen by the number of important visitors it has received. Including the Ministry of Education and the University of El Salvador Department of Agronomy.

Our method “bio intensive” for ecological cultivation focuses on small scale sustainability for self consumption and mini commercialization. We aim to work with nature to give good production in a small space with low water inputs. We try to use only native seeds and organic fertilizers, so the minifarm is almost totally self-sustainable.

This “bio intensive” method is based on principles that can be adapted to climate conditions easily implemented with hand techniques and simple tools. The result is an ecological agriculture producing nutritious organic food and helps reconstruct and improve soil fertility in the process. Our hope is that this method offers a solution to the problem of food security for vulnerable families. It is a solution to environmental destruction and contamination, the waste of natural resources, the dependence on fossil fuel derivatives that are linked to climate change. With this background our method aims to grow all our food for a complete diet in the least space possible and minimum water input.

### **The profound preparation of the soil**

Using techniques like double digging to 60 cm aerates the soil and gives better drainage

### **Use of compost**

The soil is fertilized by compost, which can be used from kitchen waste thus recycling nutrients to the soil for the next crop cultivation. The compost has many properties that benefit the soil, like improving the micro organism life.

### **Use of seedlings**

The seeds are sown in nursery beds or land trays to produce healthy seedlings ready to transplant for garden beds. Nurseries give a protective environment at a critical time for vulnerable seeds.

### **Close planting**

Every bit of land is utilized by this close planting to encourage a beneficial mini climate; the same method is used when transplanting and where the beds are totally covered.

### **Association planting**

A system of complementary planting uses all the mutual interrelationships between the different plants. Some plants will attract some beneficial insects, whilst others will drive plagues away. All plants have mutual relationships; we have to learn to utilize these for optimum production.

### **Crop Rotation**

To help the fertility of the soil, we rotate each family of crops to avoid exhausting the soil.

### **Compost cultivation**

Sustainability of the garden depends on the regular elaboration of compost; the bio mass carbon has to return to the ground to maintain its fertility. Therefore 15% of the kitchen garden must be targeted for grains that produce biomass like corn and sorghum.

### **Diet and vegetable cultivation**

We aim for a complete and nutritious diet for pupils at the school kitchen. So to produce optimum cultivation of calories in a small space, 30% of the area would be crops with high calorie values like yucca, sweet potato etcetera and 20% is aimed at growing vegetables that give the mineral and vitamin requirements for the pupils. The rest of the land products are sold to the local market.

### **Use of open pollinated and native seeds varieties**

It is important to use open pollinated seeds varieties, not genetically modified. These native seeds are our key to bio diversity, one of the most important roles of the project. The seeds are adapted to their particular microclimate so we preserve the local genetic biodiversity spread to better adapting to problems of climate change than commercial type seeds.

### **The integrating of all the principles.**

The success of the bio intensive ecological method depends on the application of all these principles in an integrated manner to assure soil fertility and optimum results. Omitting one principle such as using close planting but not feeding compost) can rapidly negative effect the soil's fertility and production.

In reality when we started working the soil, the land was full of gravel, clay, rubble, a base subsoil highly compacted and very malnourished. Now we have 66 beds producing a variety of vegetables as: Yucca, Corn, Aubergine, Spring Onions, Onions, Tomatoes, Sweet Peppers, Cabbage, Carrots, Spinach, Lettuce, Mint, Parsley, Coriander, Celery, Chipilin, Beans, radish, peas, green beans Beetroot, Acelga, Colish, Coconut trees, Papayas, and bananas.



### **THE GARDEN IN SCHOOL CURRICULUM:**

One of the main aims of the present ministry of education is the inclusion of activities using real life situation and problems so pupils can gain experience to develop knowledge and abilities to solve real life problems. Part of our plan for the school garden being based in a place of education is how to integrate the activities of the garden into the main school curriculum. We are finding that through this project we can help to rescue the child's identity and reinforce healthy traditional values that encourage responsible citizenship. A few project links to the school curriculum:

#### **Mathematic exercise, a water tank leak:**

The children had to determine the water flow through different leak orifices, using both radius and diameter of the water tank volume etc.

#### **Infiltration test:**

The children calculated volume, radius, diameter and speed the water is consumed by the soil.

#### **Art and Creativity syllabus:**

A mandala was designed and used as a productive bed. The mandalas are schematic and symbolic diagrams, some from antiquity representing the micro-cosmos, macro-cosmos and centre of the universe, holding symbolic power and energy including the Mayan 2012 ideals, for example.



**These students do an exceptional job teaching about the plants and process and they take this learning and their enthusiasm to the community, building environmental advocacy.**

### **Model building:**

The children are encouraged to design and conduct a model of the garden. They had to measure the site and garden and allocate each one of the designated areas they were encouraged to use their creativity.



### **T-Shirt Competition:**

The children who worked at the garden organized a competition to design a t-shirt of symbolic design that best represents for them the garden ideals.

From the “budding” stages of the project several pupils showed so much enthusiasm that they became the main protagonists in developing and driving their project forward. Some worked hard preparing the land whilst others prepared the compost. They were ready in less than 90 days. The pupils even organized their own board of directors to set guidelines and conduct all the activities of the garden, thereby encouraging responsibility too. It really was a token of the love for nature from this student community!

### **SHARING OUR LEARNING WITH VISITORS**

#### **National University of El Salvador.**

We received students and teachers of the Agronomist department; their interest focused on reconstruction of the soil through organic fertilizers. The Nutrition Department focused on double digging and the capacity for well dug soil to produce a variety of nutritious, high quality crops in small spaces.

#### **Local Public Schools:**

The garden received several visitors from pupils and teachers of the Sonsonate area schools. Our pupils welcomed them and explained why they liked the project and how they get involved in it.

#### **The Farmer to Farmer Association.**

A group of farmers came to see how the “bio intensive agriculture” functions. We had a significant interchange of experiences and knowledge.

### **Canadian environmentalist and consultants**

Clara Qualizza, a director of Rainbow of Hope for Children organized the visit. They constructed a house for a poor family when they were here. The children explained the 4 basic steps of the bio intensive method and the Canadians interacted with our children teaching them how to play hockey, and then they played a game of soccer together.

### **Ministry of Education and Individual Visitors:**

The garden has received visits from the Regional Office of Education and various individuals, including the manager of the organic movement in El Salvador, the owner of a Peruvian Restaurant, who values organic produces to offer his clients.

These visits have not only raised the school profile but also the level of importance of the organic method. The students have learned how much interest these organic methods are having from sections of their country and internationally too. They are appreciating their work so much more!

#### **A POEM TO THE GARDEN by Ronald Pacheco Grade 9 School leaver 2011.**

Goodbye my beautiful garden, I will leave you happy  
seeing you flourishing,  
My head held high, because from you I have learned so  
much of nature  
You always will remain in my mind like the remem-  
brance of the scent of fresh picked veggies that  
Have just been picked or planted, the purity of the wind  
and sunrays.  
That refreshes and illuminates our everyday, life work-  
ing the land that every day gets even better.  
I always will remember the smile of those that work  
every day to make you even more beautiful and protect  
you, my dear and unforgettable garden. !!!

### **THE TRANSFORMATION NEVER STOPS.**

Finally, Lic Rivera the headmaster has been so generous in allowing not only the projects development but also his school infrastructure, such as the store room for tools, the seed bank room and classrooms used for garden activities. Nothing could have happened without his support and guidance.

**We at Rainbow of Hope also appreciate the leadership of teacher, Castor Artiga, who has been a strong teacher advocate for the project in the school, as well as the entire staff for their advocacy, integrating the garden into the school curriculum, instruction and learning.**