

Aquaponics Helps to Feed Students, Staff at Orphanage in Reynosa, Mexico

By
Paul and Bonnie Range

18 Recently, we went to Reynosa, Mexico to see the aquaponics unit of Rio Bravo Ministries (<http://www.rio-bravo.org>). Our experience visiting orphanages in other countries could only be best described as grim, so we were prepared for the worst. Much to our amazement, we found a well run, clean facility with happy children. The family-style housing was clean, well maintained and full of friendly, courteous children who spoke excellent English. Ray and Leah Hansen run this amazing place along with their son, Spenser, and his wife, Patti, without financial help from any large organizations.

Spenser is the general director of the facility and, if that was not enough work, has established an aquaponic unit housed within a 100' by 120' greenhouse on the campus.

The greenhouse is a simple, but well built structure of fiberglass, C-purlin and concrete block containing both fish tanks and grow bed. Entering was akin to walking into a Central American jungle with banana trees and various vegetables growing in profusion along with huge beds of duckweed and water lettuce. Fish are raised in three large raceways, the largest 10' wide x 60' long with a depth of about 4.' Aeration was provided by an ingenious system of balsa diffusers run by a simple blower.



Banana plants grown using aquaponics in the 100' x 120' greenhouse at Rio Bravo Ministries, Reynosa, Mexico.

The fish are fed a combination of duckweed, water lettuce and commercial feed. This is done by two methods. First, both duckweed and water lettuce is simply thrown into the raceways. Secondly, the water lettuce is ground up by use of a common sink disposal which is hung over the tank. The lettuce and water are put into the disposal which grinds the lettuce and distributes the slurry into the tank. When Spencer complained of the high cost of commercial fish feed we showed him a simple, self watering mechanism for growing bulk sprouts that will provide inexpensive sprouts for both fish and their growing chicken population.

Breeding pairs (one male T. Honorum and five female Red Mosambiques) are held in floating cages made of ½" plastic coated mesh. The cage floats in a breeding tank that is 4' wide x 10' long and 5' deep.

Ten of these breeding tanks, which were mostly full of 1" long fry, were also used to raise additional duckweed. When the fry reach about 1 - 1 ½" they are transferred to one of the three raceways to grow out before being placed into the large tank. Fish are harvested every two weeks or so. The smaller fish are thrown back to grow some more and the larger, 1-1 ½ pounders, are processed to provide the children and staff with three to four meals of fish per week.

We provided some advice on an integrated aquaponic system that would completely eliminate outside commercial feed, replacing it with sprouts, worms, duckweed and water lettuce. In the next issue of Aquaponics Journal, we will have an article that covers using various natural feeds in aquaponics.

An operating small aquaponic unit is located outside the greenhouse to provide hands-on experience for the school children. The children are not allowed within the greenhouse because of the deep water danger contained within both the breeding pens and raceways.

Spencer hopes to be able to provide 90% of food consumed by the orphanage within the near future. You can contact Spencer at simoncanela@yahoo.com and he has gracefully agreed to answer any and all questions.

About the Authors:

Paul and Bonnie Range have been involved in numerous projects overseas involving both aquaculture and sustainable agriculture and can be contacted for questions or materials through either paul@oneseedling.com or reallylonghair@oneseedling.com.



Top: Spencer Hansen showing the water lettuce grown in aquaponics.

Bottom: children at the orphanage at Rio Bravo Ministries

Note: Jim Bogard provided several pictures and invaluable help in this project. Jim is an aquaponics student, teacher and missionary and is currently serving in Mexico, enroute to Egypt for an intensive course, then onto Costa Rico and Indonesia.