Farmer to Farmer Program and Aquaculture without Frontiers

Trip Report: Bangladesh, January - February 2011

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A trip was scheduled for January 24 – February 1, 2011 to conduct field visits, tour several tilapia hatcheries, meet with several NGO's supporting aquaculture projects, speak at Bangladesh Agricultural University and visit with partners of an Aquaculture without Frontiers project.

Fitzsimmons arrived in Dhaka on January 24. Phone calls and e-mails were sent to various contacts to confirm arrival and location / contact details. A hotel in the Gulshan-1 district was suggested as it is the district containing most of the NGO's office and diplomatic corps.

January 25th was spent meeting with several NGO representatives. In the morning I met with representatives from Winrock International including S. N. CHOUDHURY and Dr. P.K. BARUA, the aquaculture project coordinator and team leader, respectively. We discussed the status of their aquaculture programs and the activities of Dr. Bauer Duke, who was currently in Bangladesh on mission as a Farmer to Farmer volunteer.

In the afternoon I met with Tamanna KHATUN, A.K.M. Mostafizur RAHMAN and Wadud BHUIYAN from Voluntary Organization for Social Development (VOSD). We reviewed VOSD's aquaculture projects which had been supported directly by Aquaculture without Frontiers for several years. The progress of their work with AwF was encouraging with many women and their families benefiting from the hatchery and basic fish farm training that had been the focus of the AwF project with VOSD.

That evening I had dinner with Mr. Arvin Bunker, from Weidemann and Associates during which we discussed my particular mission and potential candidates for other assignments with Weidemann.

Marcel D'Costa receiving new dissolved oxygen meter

Tilapia hatchery selling all male fingerlings

On January 26 Dr. BARUA and I departed very early for Mymensingh to beat the Dhaka rush hours and a particular influx of people expected for a large religious gathering. After a couple of hours driving we stopped for the driver to eat some breakfast. Dr. BARUA and I walked down a side road to look at the countryside and randomly look for aquaculture. It took only a hundred meters and we came across a four pound complex of about 05. ha. The farmer explained that he had excavated the ponds to build up pads for his home and those of his parents and brothers. This has become a common practice

to increase income and to raise the homes above the frequent flooding events. The dikes of the ponds also remain above the flood stage providing access to the homes and keeping the fish in the ponds. The ponds were being used to rear carps and tilapia and catfish and had become the primary income source for the extended family. The income and protection had allowed for further improvements to each of the residences.

In early afternoon we arrived in the town of Mymensingh and checked into the visiting scientist guest house at Bangladesh Agricultural University. I was met in the afternoon by Dr. Mohamed Wahab, Dean of the Faculty of Fisheries. A tour of the campus and fisheries facilities was provided allowing me to assess the labs and field station. The Field Laboratory Complex (station) included a complex of large and small ponds and a field lab.

On the morning of January 27 I met with another visiting Farmer to Farmer Volunteer (WinRock) Bauer Duke. Bauer is an aquaculture colleague from the US and we were able to compare missions and reinforce recommendations across missions. After Dr. Duke's departure a graduate student, Sk. Ahmad-Al Nahid (aka Swan), showed me some student posters and additional labs until we were ready to start my guest lecture at 11:30. My tilapia aquaculture presentation at BAU was attended by approximately 50 people, with about 20 faculty and administrators, 25 students and 5 local farmers or businessmen.

Presentation at Bangladesh Agricultural University

That afternoon we visited first the Agro 3 Fish Hatchery and Culture farm. The tour was led by the owner / manager A.B.M. Shamsul ALAM. He has worked closely with the BAU faculty who have advised him on his operation. Agro 3 produces fry from the improved strain of GIFT tilapia that has been maintained at BAU. They also have an active operation producing hapa nets for client farmers. We then crossed the road to visit the Reliance Aqua Farms facilities led by Mr. Ritish PANDIT. Reliance uses a recirculating aquaculture system to reduce overall water use and to maintain temperature and water quality to increase hatchery capacity. Both of these farms include extensive hatcheries proving fry and fingerlings to many farmers. Production level at each hatchery is up to 1 million fry-fingerlings per month.

Agro 3 Hatchery and Broodstock farm *Reliance AquaFarms*

The evening of January 27 was spent in a restaurant with several faculty from BAU and the owners of the two hatcheries. We discussed options for improving hatchery operations and I recommended some things they could do to improve water reuse in the hatcheries, provision of new broodstocks to maintain genetic diversity and nutritional changes that could improve gamete quality.

On January 28, we first traveled across the town of Mymensingh to visit the farm of Dr. Md. Anwarul ISLAM. Dr. ISLAM received his PhD from Texas A&M in the 1970's and is widely regarded as the father of modern aquaculture in the region. He led the way for many others to be trained internationally and led the development of the Fisheries and Aquaculture department at Bangladesh Agricultural University. He still maintains cages and ponds on his own property.

On the afternoon of 28 January a meeting and tour was organized with the Bangladesh Fisheries Research Institute led by Dr. Md. Gulam HUSSAIN. We discussed the research agenda and various programs and then toured the research and demonstration ponds at the Institute. In addition to reviewing hatchery, broodstock and growout ponds they also showed me the tagging project used to individually identify each broodstock fish with PIT tags. This is necessary to develop a detailed pedigreed breeding program.

Tilapia from BFRI ponds *Passive Internal Transponder (PIT tag)*

At BFRI we met with staff and a small group of farmers to discuss research needs and how the fish farmers themselves felt that the government and scientists could best assist the industry. We also discussed the interests amongst farmers for more polyculture and integrated farming research and demonstration projects. I provided several recommendations regarding examples of successful research projects and where funding was available as well as good examples of polyculture and integrated farming from China, India and my student's farms in Arizona.

In the late afternoon of 28 January, we visited the Brahmaputra Fish Seed Complex owned and operated by Nurul HAQUE. Mr. HAQUE has developed the first all-male tilapia stocks produced using the Y-Y or Supermale technique. This method takes several years to implement but once accomplished can provide all–male fingerlings to farmers without the use of hormone sex-reversal or hand sorting.

Staff with YY –Supermale broodstock

Brahmaputra Hatchery

Dr. Wahab, left, and Brahmaputra Hatchery Staff. Mr. HAQUE to left of Fitzsimmons

The evening of 28 January was spent at an all faculty dinner where I was able to discuss aquaculture research and development with BAU faculty as well as graduates of BAU who now serve at other universities. These included Dr. Md. Shah-E-ALAM, the Vice-Chancellor at Sher-e-Bangla Agricultural University and Dr. A.S. Mahfuzul BARI, Vice-Chancellor at Chittagong Veterinary and Animal Sciences University.

Very early on the morning of 29 January we returned to Dhaka. Most of the day was spent with staff from CARITAS. Marcel D'COSTA and Md. Mijanur RAHMAN provided an overview of the past projects completed with the support of AwF. CARITAS has been a partner with AwF on two prior projects and I was especially interested to review past projects and to consider the potential for new efforts. Dr. Anwara BEGUM has been our primary contact, but I was able to meet two other scientists in the program who have contributed considerable efforts in the field working with women's cooperatives to start family aquaculture projects. This also built upon the earlier visit to the sites by Carly Inkpen in an earlier Farmer to Farmer – AwF Aquaculture niche trip.

On 30 January, I traveled to the Dhaka airport with Dr. Martin van BRAKEL, a research scientist with the CGIAR Challenge Program on Water and Food. Dr. van BRAKEL has worked on aquaculture and water quality issues in many countries and we have many colleagues in common. He is currently based in Sri Lanka. I departed Dhaka in the afternoon, had a very long layover in Delhi, India, leaving early on February 1st.

Conclusions

Overall the trip was very worthwhile as I was able to meet with the farmers and hatchery managers who had requested assistance as well as to meet with the past and present partners on Aquaculture without Frontiers projects. I was also able to meet with many of the leading aquaculture research and development professionals in the country. The lack of aquaculture extension expertise was a constant concern and the role of NGO's has been critical to supporting this activity in the face of limited governmental support. Recommendations for building extension support and training were provided along with suggestions of how hatchery staff and feed companies might also contribute. The industry is growing rapidly and the level of sophistication is impressive. There is a desire to build a processing plant for value added products for sale domestically and in order to generate foreign exchange.

Table 1.

Location / Organization	**Male**	**Female**	**% M/F**	**Number of families represented**	**Number of consumers benefiting**	**Number of recommendations**
Winrock, VOSD, Weidemann	6	1	86	7	7	5
Bangladesh Agricultural University	38	12	76	50	100	6
Agro 3	8	3	73	9	20	4
Reliant Fish Hatchery	12	1	92	11	50	2
BFRI	24	0	100	24	200	3
Brahmaputra hatchery	13	0	100	7	50	3
Total (adjusted for those present at multiple locations)	**101**	**17**	**86/14**	**108**	**327**	**23**