

University of Arizona – Aquaculture without Frontiers

Farmer to Farmer - Aquaculture Niche Project

University of Arizona

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The Aquaculture Niche Project will be a collaboration between the University of Arizona (UA) and Aquaculture without Frontiers (AwF) to provide training and support to fish farmers who request education and advice on sustainable aquaculture practices. UA will serve as the implementing organization while AwF will provide an initial technical review of applications and an extensive list of qualified volunteers, many of whom are US based fish farmers. AwF has an existing backlog of qualified applications and volunteers that would allow the project to start as soon as funds were approved. We expect that we could support at least twenty volunteer missions. There is a strong potential for matching funds that would allow us to support additional missions. The Principal Investigator has a long record of international development work in sustainable aquaculture practices and has served as a volunteer for Farmer to Farmer (Jamaica) and AwF (Indonesia, India, Mexico, Thailand, Egypt, Mauritania, and Guyana). He is also a past-president of the World Aquaculture Society and has extensive contacts in the aquaculture and agricultural development spheres. AwF and UA have also been involved with the development of Best Aquaculture Management Practices, a series of guidelines to assist aquaculture producers to protect the environment and the practitioners themselves so as to meet the goals of NGO's and seafood buyers who are now requesting that seafood be produced using sustainable methods. Outstanding requests for support are from Bangladesh, Mexico, India, Indonesia, and Trinidad and Tobago. We have received additional requests for training from farmers in the Philippines, Liberia, Brazil, Guatemala, and Honduras that have not been vetted by an on the ground volunteer or the AwF technical advisory group yet.

Total Request: \$ 97,528 for one year. January 1, 2010 – December 31, 2010

Farmer to Farmer Aquaculture Niche Project Proposal

1. Objective – Our objective is to utilize an existing **collaboration between the University of Arizona (UA) and Aquaculture without Frontiers (AwF)** to support Farmer to Farmer volunteers to provide **on-site information and training in small-scale sustainable aquaculture** techniques in developing countries. Our focus will be training of farmers and extension personnel in **Best Aquaculture Management Practices (BMP's)**, a generally accepted set of guidelines that are quickly being adopted by governments, World Wildlife Fund and other NGO's, farming organizations and major seafood buyers (Red Lobster, Whole Foods, WalMart, Sysco).

2. Description of problem – **Aquaculture is the fastest growing sector of agriculture on a global basis and is critical to replacing overfished freshwater and marine resources.** Much of the developing world depends on seafood as a major source of protein and income. **However, many aquaculture projects have been developed using non-sustainable techniques that harm the environment, utilize excessive amounts of fishmeal, introduce exotic species, parasites, and pathogens, and provide inadequate safeguards for workers.** The global charity Aquaculture without Frontiers was organized and acts to support sustainable aquaculture practices to benefit the rural poor in developing countries. AwF is a completely voluntary organization, www.aquaculturewithoutfrontiers.org that has no administrative staff, but has a strong record of achievement supporting (funds and/or technical advice) sustainable aquaculture development. Some aquaculture practices and industry sectors have been responsible for environmental and social externalities or impacts. Reducing or eliminating these impacts has been a focal point of research for many aquaculture farmers, researchers, and extension professionals. AwF has been in the forefront of teaching and supporting more sustainable aquaculture practices and sharing these with disadvantaged poor, especially women and others in extreme poverty. **AwF and their partner NGO's believe that aquaculture practiced in a sustainable manner is one of the most efficient methods to improve household nutrition and income.** By teaching and training farmers to use native species of fish, to incorporate locally available feed ingredients, to develop and follow bio-security protocols, and to re-use fish effluents to irrigate row crops, vegetables, and tree crops, fish farmers can develop a truly sustainable farming method. Following these practices may increase operating costs in the short term, but over an extended period the more sustainable practices will prove to be cost-effective and will be required by many buyers. AwF volunteers have directed or advised projects in over twenty countries in the Americas, Africa and Asia. There is a current backlog of requests for volunteer assistance that have not been met due to lack of available funds. **These requests have been visited on the ground, the applicants interviewed and the request reviewed by the AwF technical advisory group and found to be worthwhile, but are on hold.**

The UA collaborates with federal and international agencies, NGO's and the private sector to conduct agricultural research, education, and extension work on a global basis. The UA Director of International Agriculture Programs, Kevin Fitzsimmons, has served as a volunteer with AwF, and Farmer to Farmer, and as Past President of the World Aquaculture Society. We propose that the UA serve as the implementing organization to provide the requisite administrative and reporting duties while AwF would provide its list of approved proposals and extensive list of US volunteers. We believe that this would be a most **cost-effective opportunity to leverage an existing list of volunteer requests and willing professional expertise** to improve the operations of aquaculture farms. Several of these requests originate with other NGO's that have some resources and in some cases operating fish farming

projects, desire to improve sustainability and have requested competent technical and practical advice but do not have funds to bring in professional consultants. For example, **a tilapia farming cooperative in Trinidad and Tobago** has requested training in BMP's, integration of fish-vegetable growing operations and development of US market connections. A second example, the Universidad Juarez Autonoma de Tabasco works with indigenous Lacadon and Mayan communities in **Tabasco, Mexico** who have requested assistance in **BMP's and farming and processing of native cichlid fishes** for local consumption and regional sales. In both cases, AwF volunteers have already visited the sites to assess the situation and current farm operations and meet with the applicants.

3. Proposed Activities:

a. Key Partners - Our basic plan is that **AwF would forward requests that their technical advisory group has vetted to the UA for further evaluation and then implementation making use of the existing AwF volunteer data base.** Dr. Fitzsimmons and the UA staff would make a final review of the proposals and then contact the host country partner NGO and individual(s) who would host a volunteer. UA will consider the number of farmers to be assisted, the aquaculture situation in the host country, the number of other beneficiaries (fish consumers, farm employees-family members, etc.) The ability of the NGO partner to provide local support and follow-up support and reporting after the volunteer's visit will also be an important factor in final selection of a particular request. UA would then **develop a Scope of Work (SOW)**, based on the request and the experience and information gathered by AwF volunteers and the staff at the UA. Local contributions (expenses and in-kind) from the partner/host would be identified and documented. The SOW would describe the specific tasks for the volunteer and the skills and experience that would be needed. The most common aspects where fish farmers require additional training and assistance include how to improve water quality management, how to develop or purchase feeds that improve growth rates while reducing waste generation and eutrophication of water, how to operate and manage a fish farm without the use of antibiotics or chemicals, how to install and maintain bird netting, where to purchase certified pathogen free stocks, and how to prepare or purchase feeds with minimal amounts of fishmeal. These topics are also the core of the BMP's that have been adopted by World Wildlife Fund, the Aquaculture Certification Council, WalMart, Whole Foods and others sourcing sustainably grown seafood. AwF volunteers, as experts and practitioners of sustainable aquaculture are familiar with these issues and practice them on their own farms.

In addition to these and other applications through the AwF, the **UA could also consider direct applications from farmers and farmer groups in eligible countries.** As a past-president of the World Aquaculture Society and many years in international development, Fitzsimmons receives many direct appeals for assistance. Again, the ability and willingness of a host and NGO to work with UA to document the results, will be one of the primary criteria in project selection.

After the UA develops the SOW and selects the volunteer, the **UA will prepare the contract with the volunteer, arrange visa and other travel documents and purchase insurance.** The office staff members at the UA have experience with these procedures and would prepare a separate spreadsheet-based **management information system to track the Aquaculture Farmer to Farmer project.** The project will also **develop and post an Aquaculture Farmer to Farmer website** linked to the AwF and University of Arizona Aquaculture <http://ag.arizona.edu/azaqua> websites. The website will describe the overall program, link to the AwF application page, and have a results section that will include reports, monitoring and impacts.

In Table 1, are some of the farm projects currently requesting Farmer to Farmer-type assistance through AwF. These projects have been reviewed by the technical advisory group and have been visited by an AwF volunteer and are indicative of the types of projects that would be considered.

Table 1. Current requests for sustainable aquaculture training.

Location	Farm project	NGO Partner	On ground reviewer / Date of review	Number of farmers	Gender
Sunderbans, West Bengal, India	Hatchery operation training	St. Xavier's Vocational Training Centre	M.C. Nandeesh / Mar 09	50	Female
Mohammadpur Bangladesh	Carp hatchery and polyculture	Association for Rural Society	M.C. Nandeesh / Apr 2009	70+	Male and female
Noumea, New Caledonia	Tilapia farmers cooperatives (Fiji, Papua New Guinea, Cook Islands, Caledonia)	Secretariat of the Pacific Community	Ben Ponia / June 09	?	Male and female
Trinidad and Tobago	Tilapia farmers cooperative	T&T Tilapia Growers Union & Univ. of West Indies	Indar Ramnarine / June 09	5 farms, 15 employees	Male farmers and employees
Banda Aceh, Sumatra and North Sulawesi, Indonesia	Mud crab, shrimp, and seaweed farmers	Aquaculture without Frontiers / CNN Aquaculture	Rafael Martinez / July 09	300	Family farms with males on shrimp and females on crabs and seaweed
Tabasco, Mexico	Two indigenous communities, native cichlids and vegetables	Universidad Juarez Autonoma de Tabasco	Kevin Fitzsimmons / July 09	220	Male and female

b. Target Hosts - **AwF will be the primary partner**, but **six host country NGO's and in two cases Universities** (see Table 1) are expected to participate and provide valuable contributions of time and resources. Specifically the hosts will be expected to provide all local transportation, take the lead to arrange workshop times and locations, invite local farmers and contribute to the training efforts to improve sustainability for aquafarmers in the host countries.

c. Numbers and types of volunteer assignments - We expect that each of the **partner NGO's and individuals listed in Table 1 would serve as hosts**. Our plan is to have **20 Farmer volunteer assignments** during the grant, each averaging 10 days. In the first seven months we plan to arrange ten Farmer visits **to six locations**. Our plan is to develop the Statement of Work in conjunction with the host partners that have been vetted and approved by the AwF technical advisory group, an AwF volunteer who has been to the site, and finally by the UA. The SOW will have a heavy focus on provision of training in Best Aquaculture Management Practices. Farmer volunteers will be selected in great part on their ability to provide practical training in BMP's from their own experiences. On completed AwF projects to date, our host-partners have included World Vision, Mercy Corps, Partners International, the Toleo Foundation, the YSI Foundation, and Caritas. In each case we have worked with the host, or a host representative, to provide practical training and support and then to document the results of the volunteer work, determine the changes in operations and improvements in farm capacity, and reduction or elimination of environmental damages.

4. Sources of US volunteers:

a. The AwF volunteers, and others that UA might recruit, will all have practical experience with Best Aquaculture Management Practices. United States markets have been some of the first to demand that farmer follow more sustainable practices and US NGO's and academics have collaborated with industry to develop these BMP's. Now international producers are under heavy pressure to implement BMP's in order to sell to US markets. US Farmers who have practical experience implementing these BMP's will be some of the best instructors.

b. Recruits - A potential volunteer list will be developed incorporating AwF volunteers, in conjunction with Dr. Joe Tomasso, the volunteer coordinator for AwF, and Fitzsimmons' extensive contact list. Several **aquaculture employment/volunteer opportunity list serves and websites will also be used to publicize the opportunities** to expand the potential pool of Farmer to Farmer volunteers. These include the World Aquaculture Society jobs website, the AquaFish CRSP Ed/Op website, www.aquaculturejobs.com, and the AwF Facebook group. **Only volunteers meeting US-AID criteria (US citizens and permanent residents) would be reviewed** to serve on the proposed projects. Many of the AwF volunteers are known to Drs. Fitzsimmons and Tomasso and they have already answered a questionnaire detailing experience, locations of volunteer interest, language skills, and time frame for volunteering. Many of the fish farmers in the Western United States have worked with the USDA – Western Regional Aquaculture Center, where Fitzsimmons serves on the Extension committee and the Board of Directors.

We plan to provide a final analysis of the requests for assistance listed in Table 1 and then recruit and identify volunteers within a few weeks should Arizona and AwF be selected. Volunteers we determine to be qualified, will be contacted through the e-mail list maintained by the AwF and the associated AwF

group on Facebook. Aquaculture farmers and extension specialists from across the US who indicated they have the requisite skills for a particular mission will be contacted to determine their availability and interest in a selected project. If an additional pool of volunteers is needed, we will solicit volunteers through the industry specific channels listed above. We will also begin preparation of the SOW based on the original request and our follow-up discussions with the host NGO. The SOW's would be prepared within two months and the first **ten volunteers in host countries in months 3-6**. We plan to support **ten project missions during the first seven (7) months and ten more in the second half year**.

b. Placement – The UA office has extensive experience providing international travel and documentation needed for University projects. The office also administers the **TraiNet and Visa Compliance System** at the UA, acting as Originators and Verifiers for several US-AID supported projects. The UA will be responsible to coordinate with the hosts and the Farmer volunteer to arrange travel and complete all the tasks in the SOW. Typically the **host NGO will provide local transportation, several meals, interpretation, if necessary, transportation for local farmers, and a venue for training or workshops**.

b. Supported – Before departure the Farmer volunteer will be provided with specific details and schedule with contact persons and numbers, in addition to the goals and activities in the SOW. The volunteer will also be provided instructions and funds to purchase a SIM card to be used in personal cell phone to enable easy communications in country. We have found this to be critical for efficient use of limited time and travel resources. Most important, the volunteer will be supplied with an Aquaculture Water Quality test kit, a pH test pen, extra reagents, and if necessary, an oxygen meter. These are all critical tools for monitoring effluents and farm water conditions. Just as important, the volunteer will be provided with expendable lab supplies and text books which are very difficult to obtain in most developing countries. Finally, AwF has, in the past, been able to procure foundation funds in support of specific projects. If additional monies or support were provided as matching or in-kind, the Farmer to Farmer program would benefit and be able to expand the number or the duration of individual missions.

5. Target beneficiaries

a. **Our primary beneficiaries will be the farmers who receive training and technical support and their immediate families.** The secondary beneficiaries will include neighbors and colleagues who learn from the host farmers and the cooperatives and NGO's who are supporting the fish farmers. **Improving the capacity of the NGO's and Universities to provide additional BMP training themselves** is a critical goal. Another benefit is that family members and local community will have higher quality seafood and a cleaner environment. Finally, consumers in the local and international markets benefit when fish are grown using the most sustainable practices. **The six projects identified in Table 1 would directly benefit at least 650 people in six countries.** The Aquaculture Farmer to Farmer project would allow these producers to utilize practices that will minimize environmental impacts while at the same time improving the market value of the products.

b. **Impacts and Benefits - Volunteers and their hosts would jointly be responsible for collecting information on the farming practices generally in use before the volunteer actions and after.** Each project report will use summary tables described in the RFP (Annex D) as well as a more detailed text report. The table will be for a quick check of project objectives. The more detailed text report will document the anticipated changes in behavior and practices that will be the long term contributions of the project. Although the document will not normally go into an economic analysis of the impacts, simple

enterprise budgets describing the costs and benefits of the changes might be included to better describe the improvements that are resulting from the Farmer to Farmer visits.

6. Knowledge generation and sharing

- a. **Recommendations and training** that are developed to assist farmers to operate within the BMP's will be prepared into **Power Point presentations and/or printed materials and made available to other volunteers**. Some of these BMP's written in the local language (Bahasa Indonesian) have already been prepared in Aceh, Indonesia on a prior AwF project and were printed with UN-FAO support. We plan to expand this with additional translations to Spanish and provision of booklets for each of our locations.
- b. Technologies – In addition to Power Points, workshops and brochures, many of the materials and resulting reports and findings will be posted on websites (AwF, WAS, UA, host NGO's). Some of the BMP's will also be formatted for a Podcast, which are becoming very popular in undeveloped locations.
- c. Future beneficiaries - The BMP training materials will be made available to each of the host NGO's and universities for further dissemination. They will also be posted on multiple websites and freely copies podcasts.
- d. Final documentation and reporting - **UA would be tasked with providing the assignment documentation and monthly, quarterly and annual reports to the sponsor**. The results would also be posted at the Aquaculture Farmer to Farmer Program and AwF websites and reported at the annual World Aquaculture Society. A final report will be prepared to describe the overall program successes, lessons learned, and aspects that might be improved. This final document will be written by several of the volunteers and the project PI. It will be submitted to the sponsor for the record and also submitted to Reviews in Fisheries Science, a professional journal that specializes in publishing peer-reviewed studies such as this. It is anticipated that the results will be of broad interest to the aquaculture development community and possibly to a larger audience of agriculture and fisheries experts.

Table 2. Example of table used to develop SOW and eventually complete Annex D Tables 1a, 1b and 2. This type of planning will help to recruit the volunteer and better design the SOW and later the reporting using the Tables suggested in the RFA.

Assignment	Name	BMP's covered	Number of farms involved	Number of training sessions & dates	Number of men / women attending	Changes anticipated	Changes to be documented in follow-up
Pond and vegetable plots in Tabasco, Mexico	Tom Bell	1. Feed management, 2. broodstock biosecurity, 3. alternative proteins to fishmeal, 4. use of effluents for irrigation of citrus and vegetables	Three pond farms and one cage cooperative with 50 cages in Village Uno and 70 in Village Dos	Two farms visited Aug 6, 2010 One workshop Aug 9, 2010 Cage array visit, Aug 11, 2010	2 men/ 0 women 23 men/ 12 women 5 men/ 0 women	1. Better coverage for feed bags 2. Quarantine new fish 3. Replace fishmeal with poultry by-product 4. Effluent water used for irrigation	1. Determine if plastic drums were provided 2. New tanks installed for quarantine 3. Check with feedmill to get new formulation 4. Determine if farmers are saving money on fertilizers

Table 3. Time line


	Months 1 and 2	Months 3 and 4	Months 5 and 6	Months 7 and 8	Months 9 and 10	Months 11 and 12
Review existing project applications, solicit new apps	Assignment 1,2,3,4, 5	Assignment 6, 7,8,9,10	Assignment 11, 12, 13 14	Assignment 15,16, 17	Assignment 18,19, 20	Assignment
Contact and confirm NGO partner and host(s)	1,2,3,4	5,6,7,8,9, 10	11, 12, 13	14, 15, 16 17	18, 19, 20	
Develop volunteer lists per project	1,2,3,4	5,6,7,8, 9 10	11,12, 13	14,15, 16, 17	18,19, 20	
Write SOW's and send to Weidemann	1,2, 3, 4	5,6,7, 8, 9	10,11, 12,	13,14, 15, 16	17,18, 19,20	
Review SOW and procedures with volunteers	1,2, 3	4,5,6,7, 8	8,9	10, 11, 12,	13,14, 15	
Mission in field	1,2	3,4, 5, 6, 7	8,9,10	11, 12,13, 14, 15	16, 17, 18, 19	20
Implementation work plan	X					
Assignment reports submitted	1	2, 3, 4, 5	6,7,8,	9,10	11, 12, 13, 14, 15	16, 17, 18, 19,20
First Milestone report			X			
Final Milestone Report and Paper submission						X

Applicant Name: University of Arizona

Grant Activity Title: Farmer-to-Farmer Special Program Support Project Niche Award - Aquaculture

Line Item Budget *	Milestone 1	Milestone 2	
	July 31, 2010 10 assignments completed	Dec. 31, 2010 20 assignments completed	
Administration & Management			
Salaries (Mary F. Riina) 20% FTE	\$ 1,979	\$ 1,979	
Other Direct Costs (ERE) @44.7%	<u>\$ 885</u>	<u>\$ 885</u>	
Subtotal	\$ 2,864	\$ 2,864	
Direct Activity			
Salaries	0	0	
Other Direct Costs	0	0	
Communications	\$ 600	\$ 600	
Insurance (\$300 x 10 trips)	\$ 3,000	\$ 3,000	
Visa/Travel Documents (\$60 x 10 trips)	\$ 600	\$ 600	
Travel & Transport			
	\$ 19,500	\$19,500	
	\$ 9,500	\$ 9,500	
<ul style="list-style-type: none"> • Airfare (10 trips @ \$1,950) • Hotels (10 days @ \$95 x 10 trips) • Per Diems (10 days @ \$70 x 10 trips) 	\$ 7,000	\$ 7,000	
	\$ 2,300	\$ 2,300	
	\$ 1,900	\$ 950	
Goods & Materials (water quality test kits, dissolved oxygen meters)	\$ 700	\$ 1,050	

Books, pH pens, expendable lab supplies)	\$ 800	\$ 1,400	
Subtotal	\$ 45,900	\$45,900	
Total	\$ 48,764	\$ 48,764	\$ 97,528
Indirects (not allowed) 0%	\$ 0	\$ 0	
Tranch Payments	\$ 48,764		
Tranch Payment 1		\$ 48,764	
Tranch Payment 2			\$ 97,528
Contributions			
Hosts (in kind estimates @ \$800 per assignment	\$8,000	\$8,000	\$ 16,000

Signature: 

Name: Kevin Fitzsimmons

Title: Professor and Associate Director

Date: September 15, 2009

Attachment. Budget for Aquaculture Niche Award – University of Arizona and Aquaculture without Frontiers

Milestone 1. Between Jan. 1, 2010 and July 31, 2010 the UA will **send ten Farmer volunteers** to fish farms in Mexico, India, Bangladesh, Trinidad and Tobago, Indonesia and New Caledonia to provide training in Best Aquaculture Management Practices. Each of the **six host institutions** and farm groups will be strengthened with water quality test equipment, reagents and expendable lab supplies, and reference books. We expect that the Farmer volunteers, in conjunction with their hosts, will conduct two workshops each, spend several days on farm tours each and should **train between 200 and 250 farmers**.

We expect that **about 150 families will benefit** as training will often include multiple members from same family.

Milestone 2. Between August 1, and December 31, 2010 the UA will send UA will **send ten additional Farmer volunteers** to fish farms in the original sites and/or any additional farm locations that meet the AwF and UA criteria to provide training in Best Aquaculture Management Practices. We may add one or two host institutions in one of the host countries. They would also receive the testing equipment, reagents and expendable lab supplies, and reference books. We expect that the Farmer volunteers, in conjunction with their hosts, will again conduct two workshops each, spend several days on farm tours each and should **train between 150 and 200 new farmers**. We expect that **about 50 additional families will benefit** from this training.

Budget justification and explanation:

The salary request will be for extra time for Mary Riina, the administrative assistant at the University of Arizona office, to administer this particular project. She is currently employed at 0.5 FTE and this extra 0.2 FTE would provide extra paid time for her to accomplish these tasks.

Direct costs for communications will include FedEx and regular postage, phone calls, and SIM cards for volunteers to use in their personal mobile phones during missions.

Insurance will be obtained through the US-AID preferred provider. We assume this is the same as we have used for Borlaug and visiting scholars.

Visa and document fees will be paid for those countries that require visa payments.

We anticipate an average airfare cost of \$1,950 per mission. Of course some will be considerably less and other over the estimated amount. We anticipate that in some cases hosts will provide housing and we will recover hotel expenses, but used \$95 as an average.

Per diem costs of \$70 were an average based on past international travel. We use the US State Department website to determine per diem rates.

Sustainable aquaculture has a critical focus on water quality and ensuring that there are no negative impacts from discharges. Each Farmer volunteer will take a multi-parameter water quality test kit (\$230) designed for aquaculture use to be delivered to the project participants. Projects that do not have field oxygen meters (\$950) or pH meters (\$50) will also be provided with one. Books, reagents, and expendable lab supplies will also be hand carried to each of the projects. We also expect host / partner NGO's to also contribute to these costs.