Asia link curriculum development workshop

Jimmy Turnbull, Trevor Telfer and David Little were all involved in a workshop in July (9-21st) with Asian partners that have, or are developing, postgraduate–level courses in aquaculture. Funded under the European Commission Asia Link programme the project is being coordinated by the Asian Institute Of Technology, near Bangkok. The Institute of Aquaculture and University of Aveiro in Portugal are the European partners. The project aims to improve local capacity in Asia to support development of aquaculture in Vietnam, Cambodia and Nepal. These countries represent a large range in current development of aquaculture and importance of aquatic products in the diet and the broader economy.

Whereas people in Cambodia are highly dependent on aquatic resources, aquaculture is still relatively undeveloped in comparison with its neighbours. The Royal University of Agriculture has a major challenge to train sufficient manpower to support aquatic farming and has chosen to integrate a postgraduate aquaculture programme within a broader agricultural programme. The project partner in Nepal, Institute of Agricultural and Animal Science (IAAS), Rampur, Chitwan, is similarly located within an institution charged with agricultural development. In contrast to Cambodia, official statistics suggest fish is currently a very minor commodity in Nepal, but there are many indicators of its potential importance, especially among some of the poorest groups. In Vietnam, the project has partners in both North and South; Research Institute for Aquaculture (RIA) No. 1, Hanoi and University of Agriculture & Forestry (UAF), Ho Chi Minh City respectively. This reflects the very different types of aquaculture and capacity building needs in different parts of the country where aquaculture is both well established and important to diets and overall livelihoods.

The involvement of the Institute in the project acknowledges the important role it can play in sharing experience of postgraduate education in a region where aquaculture dominates global production and training needs are huge. The design of the project allows for exchange of experiences between Asian partners and has allowed us to reflect on how we at Stirling design and implement postgraduate courses that are in a state of dynamic change to meet new opportunities and challenges. We expect our involvement will also lead to other mutually beneficial collaboration in research and other activities.

Women in aquaculture project in Nepal

Ram C. Bhujel, Senior Research Scientist & Affiliated Faculty, Aquaculture & Aquatic Resources Management, Asian Institute of Technology (AIT), Thailand and
Madhav K. Shrestha, Chair, Aquaculture Department, Institute of Agriculture and Animal Science (IAAS), Chitwan, Nepal

About 85% of people in Nepal live in rural areas, relying on subsistence agriculture and often suffering from food shortages for 4-6 months each year. Almost 90% of children suffer from some form of malnutrition e.g. stunting, night blindness, resulting in one quarter dying before reaching 40 yrs of age. Animal protein is scarce and expensive for most Nepalese, contributing to the lack of certain nutrients in the diet.

To address this need, a pilot project was launched in 2000 in Chitwan district, central Terai of Nepal jointly by the AIT and IAAS to produce and supply animal protein for the families and help generate income.

The project, funded by an NGO called WDP-German Committee, initially supported a group of 26 women farmers in Chitwan to dig a pond each. Out of 26 farmers, five were supported initially as fry/fingerling producers to supply the other farmers of the project.

Although the recommended size of ponds was 200 m2, they were allowed to dig any size of pond depending on availability of land near their houses.
Half of the construction cost was covered by the project and most of the farmers used their family labour. The farmers selected belong to an indigenous community called "Tharu" who used to catch fish from the rivers, streams and swamps. Fish used to be one of the main items of their regular diet and considered a precious item to offer to the guests. But they were experiencing difficulties in finding fish to catch. Among the selected farmers, about half of them had less than 0.5 ha land. Only 4 farmers had more than 1.5 ha while the national average is approx. 2 ha. The size of the family ranged from 4 – 17 with an average of 7. Most of the Tharus are illiterate, poor and largely dependent on subsistence agriculture.

The project provided basic technical support to the women's group including procuring the fish seed and training on fish farming. Frequent field visits were made by project staff as well as IAAS students. Farmers were

provided with a notebook to keep records of inputs and outputs. Out of 21 farmers, 12 farmers chose Nile tilapia for culture while nine chose carps. Farmers were allowed to harvest fish whenever they wanted but were asked to keep all the records of consumption and sales. It was recommended that farmers raise their fish on low cost production methods in green water system using locally available on-farm supplementary feeds and kitchen wastes. Final harvest of the remaining fish was done after about eight months.

Results

Results of the pilot project are shown in Table 1. Although small in volume, carp culture is well established in Nepal but Nile tilapia is a new species for farmers. However, more people chose to culture Nile tilapia, but they constructed smaller ponds probably because they wanted to test it first in smaller ponds. Due to this, total production, consumption and income from tilapia are lower as compared to carps. Nevertheless, extrapolated yield or the productivity (t/ha/yr) was higher from tilapia. Fig. 1 shows that fish production, consumption and sales peaked at about the 350 m2 pond size and the relationship shows that these might decrease if the size of the ponds is bigger. It indicates that as the pond gets bigger, farmers lack inputs/resources to support it. It suggests that pond size should not exceed 350 m2 for the resource poor farmers. By looking at the relationship, it can be suggested that a pond of 175-300 m 2 should be recommended which would produce about 50-90 kg of fish out of which 20-35 kg would be for family consumption and 30-50 kg for sale which would generate 30-60 US$ income in a year that could contribute 10-20% of the income required to rise above the widely accepted 1US$ per day threshold.

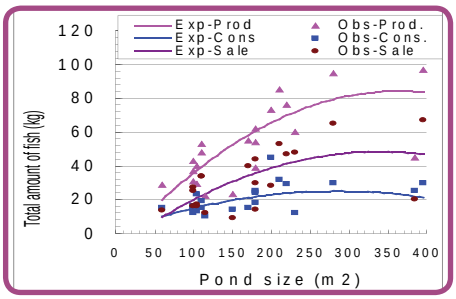

Fig. 1: Relationship of pond size with fish production, consumption and sale.

Table 1: Outcomes of the pilot project Phase I.

Descriptions	Carps	Nile tilapia
No. of farmers	9	12
Size of the ponds (sq.m.)	234	131
Fish production (kg/family/crop)	66	42
Fish production (kg/family/year)	99	63
Productivity (t/ha/yr)	4.2	4.8
Fish consumption (kg/family)	25	17
Total value of fish produced (US$)	75	37
Income from fish sold (US$)	47	22
Contribution to poverty reduction (%)#	20	10

Table 1: Outcomes of the pilot project Phase I. Note: # Per cent contribution to the income required to be above the poverty bench mark of 1US$ a day assuming that the fish pond was managed by one female member of the family.

Impacts and Implications

The pilot project proved that direct aquaculture intervention is possible. Women can manage small ponds (small-scale aquaculture) that seem to be suited to them. In contrast to the previous notion that prevailed in the country, it has provided evidence for Nepalese policy makers and others that fish can be cultured economically in small ponds. However, it has been perceived that selection of target family/group and the site is critical.

Although the project was small, it has large impacts. Thirteen neighbouring farmers constructed ponds next to the project farmers before the end of the first phase of the project. After evaluating the outcomes and impacts of the first phase, the WDP-German committee extended another two-year phase to expand the activities in the same district as well as an adjacent district i.e. Nawalparasi, adding another 53 women farmers. In this phase, fish culture was integrated with vegetable gardening.

In continuation, the Canadian Cooperation Office (CCO) provided funds for another 60 farmers to add to these groups and establish cooperatives so that they could continue or expand their activities including establishment of small businesses even after the project period ends.

The project has been considered one of the most successful projects in Nepal. The project site has been a popular place to visit by farmers and officials of many government and non-government organizations. More importantly, the outcome of the project has impacts on policy formulation by the government. The Directorate of Fisheries Development Division, under Ministry of Agriculture, Government of Nepal and the Fisheries Division of Nepal Agriculture Research Council (NARC) have accepted the model and have promoted the idea throughout the country.

At the same time, this has also impacted on the activities of the local and international NGOs. For example, using the same idea, World Bank through Winrock international has supported about 650 families to construct ponds in western Terai and another 600 ponds are going to be added in the same region. Plan international, which is one of the largest NGOs in Nepal, is also planning to support about 1,000 families using the same model in central Terai. It has been felt that due to the political change, all the stakeholders are under pressure to work together to demonstrate the impacts/results. If everything goes well, aquaculture development in Nepal is likely to take off and hopefully the sector will be more visible in terms of contribution to food security, employment creation and the country's economic development.

Aquaculture without Frontiers (AwF): voluntary services for the poor in developing countries

Michael New, OBE - Chairman, Aquaculture without Frontiers, www.aquaculturewithoutfrontiers.org

AwF operates by supplying voluntary technical advice and other resources that support responsible and sustainable aquaculture practices that have the potential to alleviate poverty and improve health through the provision of 'home-grown' food and income generation. AwF recognizes the role that women play in aquaculture and related activities and targets 'grass root' farmers. It is committed to being culturally sensitive and non-discriminatory and non-aligned in religion and politics. AwF, where appropriate, cooperates with other organisations with complementary aims.

Many people from the aquaculture sector have proved willing to offer their time, free, for field work or to provide technical advice by email, to serve the aims of AwF. The volunteer database already includes over 130 experts, with a wide range of technical expertise and language proficiency. In addition a number of students have volunteered for field work. Originally, a large proportion of the funds for the work of AwF came from individuals and organisations within the aquaculture sector, including the Fish Culture Section of the American Fisheries Society, the Aquacultural Engineering Society and three chapters of the World Aquaculture Society (WAS). We have been particularly pleased by the fund-raising activities of aquaculture students in the USA and Europe. Several supporters from the aquaculture industry are also gratefully acknowledged.

In addition, there is an encouraging tendency for the general public to support our work. For example, substantial funds have been raised through such diverse activities as sponsored dragon boat racing and an art exhibition.

AwF operates on a shoe-string with no paid staff and no home office; it is managed by directors from Australia, the USA and the UK. While such administrative frugality may be commendable for a new organization, moving to a higher level of activity will be

continued on page 28...