

The importance of *Pangasius* farming in the Mekong Delta, Vietnam

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General *Pangasius* industry in Vietnam

The farming of fish and other aquatic species is an increasingly important rural activity in the Lower Mekong Basin, supplying food and income for many households. The total aquaculture production of the Mekong Delta for 2003 was 740,369 tonnes or 66.9% of the total aquaculture output of Vietnam (1,105,300 tonnes in 2003, 14.5 % increase over 2002) (Thanh Tung N. *et al.*, 2004). The most commonly cultured fish species in the region are river catfish (*Pangasius hypophthalmus*), silver barb (*Barbodes gonionotus*), common carp (*Cyprinus carpio*) and tilapia (mainly *Oreochromis niloticus* and *O. mossambicus*) (Phillips, M. J., 2002).

Farming of freshwater river catfish has become gradually a significant aquaculture activity in Vietnam over the last six years. The most



Figures 1 and 2. Floating cages and ponds for catfish culture.

valuable catfish species actively farmed are 'tra' (*P. hypophthalmus*) and 'basa' (*P. bocourti*); where they are raised in both river-based cages and earthen ponds (Figures 1 and 2).

Fish farming has often been seen as a compatible livelihood activity that "fits" around



Figure 3 Map of An Giang Province (Source: M. Van Brackel (IOA, Stirling))

the family structure. The family house is usually located near to the cages or ponds with all family members playing a vital role in the daily husbandry and maintenance of the fish farm and livestock. It can provide a social point, where people can gather around the fish pond and also provide income and good quality nutrition for the household. At the macro-level, population trends for the Mekong Delta basin suggest an additional 400,000 tonnes of aquatic animal products will be needed in 10 years to maintain consumption at present levels. Aquaculture development will have a critical role in contributing to this food demand (Phillips, M. J., 2002).

The development of cage culture has concentrated in An Giang, Dong Thap, Vinh Long and Can Tho provinces (Figure 3) as these areas have suitable water currents and locally available supplies of seed and feed (Trong, Trinh Quoc *et al.*, 2002). An Giang is the most important catfish farming province in the Mekong Delta; in 2003 there were 3,178 floating cages for catfish farming and thousands of ponds covering a total water surface of 1,560 ha. These were mostly concentrated in three districts of An Phu (rafts), Chau Phu (ponds) and Phu Tan. In that year these cages and ponds produced 136,800 tonnes of tra and basa fish in total (111,599 tons in 2002). On the other side of the Mekong River, Dong Thap province produced about 60,000 tonnes of catfish in 2003 (Thanh Tung N. *et al.*, 2004).

Importance of *Pangasius* Culture –Government approval

Government policy has contributed significantly to the recent growth in aquaculture. Over the past 10 years, Vietnam has invested considerable resources in aquaculture, selected as one of the leading priorities for rural economy diversification and development (Phillips, M. J., 2002). In 2001 the government reduced rice production by 120,000 ha to encourage the extension of fish production for the international market (DFID R8093). The area involved in tra fish production in the Mekong Delta has increased rapidly from 1,290 hectares in 1997 to a total cultured area of 2,720 hectares in 2002, equivalent to an average growth rate of 17% per year (DFID R8093). The number of floating cages for farming catfish increased from 2,000-2,500 in 1995 to over 3,000 in 2001 (Thanh Tung N. *et al.*, 2004). New techniques and improvements in cage development and nutrition have been applied in fish breeding. This, together with the increased awareness of disease prevention and treatment, have all contributed significantly to the sustainability of *Pangasius* production in Vietnam.

Importance of *Pangasius* Culture- Market Influences

Rural families have become involved in *Pangasius* farming for a wide variety of reasons but by far the majority of households culture *Pangasius* species to sell or to use for family consumption. There are two main marketing channels for tra and basa fish. The first is a domestic market, and the second is an export market. During the last 5 years a large number of rural families have opted to increase their *Pangasius* production levels and to sell their products on the export market, distributed through processing plants (Thanh Tung N. *et al.*, 2004). This increase in production levels arose from the increased demand for this fish product from foreign consumers.

The production-export chain of the Vietnamese catfish industry has developed rapidly with many processing plants. In 2002 in the Mekong



Figure 4. Left over after filleting (Source: Prof J Young Stirling University, Scotland.)

Delta there were more than 19 processing and exportation plants compared with eight in 1997. Five of these processors are located in An Giang province with the others distributed throughout the main *Pangasius* production areas.

At these plants fish is processed, filleted, frozen and then exported (Thanh Tung N. *et al.*, 2004), either as dressed or undressed fillets (DFID R8093). Usually after filleting the fish the head and tails are sold in the domestic market (Figure 4), providing important low cost food for the local population. The increase in the number of plants boosted the processing capacity to 86 thousand tonnes per year, an approximate increase of 280% (DFID R8093).

The contribution of *Pangasius* culture at the household level

It would appear from recent findings in UK Government Department for International Development (DFID)-funded research project R8093 and from the published information that *Pangasius* farming is an important and emerging system for rural families in the Mekong Delta. As described in DFID R8093, fish farming is viewed by many Vietnamese as a favourable lifestyle option providing both security and a good income. Although pond farming has been practiced for many years, it is only recently that catfish production for export has occurred. It was found that during 2003, 71% of the farmers interviewed in the district of Chau Phu in An Giang province were involved in fish farming because it provided a high income. For only 11% of the population involved was fish farming their families' traditional occupation (DFID R8093). There are several factors that have

Box 1.

Pangasius farming: an attractive option

Accessibility of natural resources

Good production condition

Short production cycle

Improved seed technology

Available and cheap feed resource

Available markets

Source: DFID R8093.

made *Pangasius* farming an attractive option for many households (Box 1); the flexibility of the production cycle is one of most attractive. This is probably because it provides options and choices within an active livelihood portfolio.

Furthermore, each of the production systems are not species specific and could be used for other fish species. This way, the farmer's initial investment is not too vulnerable.

Within the *Pangasius* industry the diversity of stakeholders involved is vast (Table 1): the spectrum of people includes low income and poor as well as those considered to be asset-rich (Phillips, M. J., 2002). In early 2003, tra and basa farming and the export-processing sector were providing jobs to thousands of households in the Mekong Delta, including cage and pond aquaculture farmers, suppliers of different services, and labourers in processing and export businesses (Thanh Tung N. *et al.*, 2004). For the wealthier households, it was proposed that catfish farming offered a lucrative return on investment (Phillips, M. J., 2002). Whereas

labourers from outside their families (Figure 5). Labourers are usually migrant poor, who do not own any agricultural land and sell their labour (DFID R8093). Taking this into account, it was estimated that about 30,000 poor/landless people were working in catfish farming in 2003. If this is extrapolated further, then in An Giang where there were an estimated 3,000 cages, it would not be unreasonable to suggest that 6-7,000 labourers were employed within the *Pangasius* production industry (Thanh Tung N. *et al.*, 2004). The labourers on the fish cages are provided with accommodation and are paid between 700,000 and 800,000 VND per month (£24 to £27.6). In addition they receive food and drink and often a monetary bonus after a successful fish crop (DFID R8093). Although potentially profitable, catfish farming is regarded by many Vietnamese as high risk

Section	Stakeholder	Description of poor stakeholders	Technologies
<i>Catfish farming</i> (in ponds and cages)	-Farmer - Poor groups: hired labourers	Sex: men 70%; Age: 18-60; Ethnic group: Vietnamese 80%; Religion: Buddhist 60%; Average Income: VND 0.7 million/month (£24) Alternative earnings: none; Land: none or limited Education: primary school or illiteracy	Intensive cage and pond aquaculture
<i>Services of seed, feed and chemicals</i>	- State seed centres - Nursing farmers - Feed companies	About 200 poor people involved in selling fingerlings and feed to households. Their average income is VND 0.5 million/month (£17.3)	- Artificial fertilization
<i>Fish dealers and traders</i>	- Private business - Hundred poor people as boat drivers		Transportation of live fish by boat with water tanks.
<i>Processing and packaging for export</i>	- State-owned companies - Stakeholder (farmer association) companies - Limited companies	Sex: 70% female Age: 18 – 30 Ethnic group: Vietnamese Origins: Immigrated from rural villages Property: rent shared room with co-workers Average Wage: VND 800,000–1,000,000 (£27.6-34.5)	- Labour intensive technology - International quality and hygiene standards
<i>Export</i>	All companies		Frozen fillet transported by ship

Source: Thanh Tung N. *et al.*, 2004.

Table 1: Summary of stakeholders and poor groups involved in market chain for farmed catfish in An Giang Province.

poorer households, including landless or those with small land holdings, who have reduced access to loans and credit, had the possibility to increase their standard of living through employment opportunities and acquisition of transferable skills.

In An Giang province both cages and pond farms were providing employment for 11,058 households in 2003, while in Dong Thap and other provinces in Mekong Delta the households involved were about 5,000. The primary producers, who are owners of the farm, employ family members or relatives to help reduce recurrent costs. Otherwise many of the households also hire approximately 2

(Thanh Tung N. *et al.*, 2004) compared with rice production (DFID R8093). The main constraint is the high level of initial investment costs for the cage construction and for the purchase of fingerlings. Other risks considered by rural families included unpredictable market outlets, lack of water quality control - as they rely on river water - and the occurrence of fish diseases. In this situation, although aquaculture production and incomes have increased significantly, there is still an important risk that the majority of the beneficiaries would not be the poorest of the poor (DFID, 2001).

Improved infrastructure within aquatic diagnostics together with provision of good

quality and relevant information on *Pangasius* farming would substantially benefit the sustainable production of these edible fish species. The provision of information which included details on the market structure, cost-benefit analyses and aquatic animal health as well as general husbandry guidelines was provided to nearly 5,000 households in the Mekong Delta, Vietnam as part of the



Figure 5 Preparation of home-made pellets by labourer (Source: M Crumlish IOA, Stirling)

dissemination activities of DFID project R8093. The information was provided through various formats including TV/radio programmes, workshops, meetings and leaflets. It is hoped that as the information provided was supplied in a format requested by the stakeholders then it would be regarded as more “trustworthy” and reliable.

It is anticipated that provision of information in a wide range of formats would allow existing and new farmers to make informed decisions about *Pangasius* farming and provide options and choices for many rural families considering this livelihood activity thus enhancing sustainability.

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For further information on DFID R8093 (Risk issues and socio-economic impact associated with outbreaks of bacillary necrosis disease in *Pangasius* spp. (BNP) farmed in the Mekong Delta, Vietnam) contact Dr M Crumlish (mc3@stir.ac.uk)

Honorary Award to Professor Sir James Armour

The Institute is delighted to report the award of honorary Doctor of the University to Professor Sir James Armour, who is internationally renowned as one of the most eminent veterinarians of his generation. Professor Armour is particularly noted for his studies on the pathogenesis, epidemiology and control of many of the major parasitic diseases of farm livestock. Following appointments as Dean of the Glasgow Veterinary Faculty and Vice-Principal of Planning and External Relations at Glasgow University, Professor Armour was knighted in 1995. He has also served on many important committees and bodies associated with the development of Veterinary Studies and Higher Education. From 1997 to 2003 Professor Armour was a



Professor Armour at the Degree Awards Ceremony in July 2005 with the Chancellor of the University, Dame Diana Rigg, the Principal, Professor Christine Hallet, and Professor Randolph Richards.

member of the Institute's Advisory Committee where his experience and unstinting advice was invaluable in improving our research quality, leading to the award of a Grade 5 in the 2001 Research Assessment Exercise

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