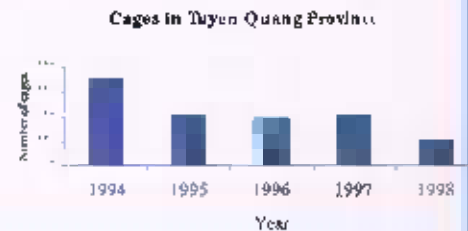


Livelihoods on the Lo River Vietnam

- Findings from an interdisciplinary situation appraisal carried out in November 1999
- Cage culture of freshwater fish is an important livelihood option for the poorest people in the community
 - Intended as a means of asset accumulation, however, it sometimes becomes a source of daily income
 - Fish cage culture integrates well with other livelihood activities
- Recently there has been a serious decline in the number of households engaged in cage culture
 - Associated with fish health problems resulting in mass mortalities
 - The current financial loan system is a major constraint



Is fish cage culture a sustainable livelihood option for the poor?

Making baskets 8,000 VND per person per day

Other e.g. construction

Cage culture of grass carp 14 to 16,000 VND

Activity Portfolio of Cage Farmers

- fish pond
- grow fruit
- other
- liveslock
- net repair
- markets
- sand harvest
- grow vegetables
- fishing
- cages

Flour 6,000 VND per person per day

Repairing vegetables

Why cage culture?

- Poor people view this as a way to escape poverty
- Successful cage culture can return benefit approximately 5 times greater than livestock
- Complimentary to other activities within their livelihood portfolio
- Good use of the household labour - women/ children collect feed, men can fish whilst guarding the cages
- Source of seed is readily available through hatcheries and middlemen/fry traders
- Fish are cheap to raise as they eat grass and other vegetation
- A ready market exists with a constant demand for these fish
- Grass carp and other fish are valuable: selling 1 kg of grass carp is equivalent to 3 days work at other activities
- Government loans are available to help poor farmers start cage culture and for many this also supplies a place to live
- Fish may be marketed flexibly compared with livestock



Grass carp are fed predominantly on grass but also other vegetables, banana leaves and stem, cassava, maize and sugar cane. Most farmers fed grass all year or only from March until October. The type of feed given was linked to its availability and labour constraints

Key researchable & developmental issues

- Better understanding of the risk factors involved such as the size, source and preparation of the fish seed
- Loan system needs to be flexible to meet the demands of the poor
- Optimise information exchange between farmers more effectively

Study methods

- The situation appraisal combined two methodologies to gather quantitative and qualitative data on the social-economic, technical/production and fish health management issues using focus group discussions, key informant interviews and a structured survey
- The study concentrated in TQ town where six communes were involved in cage culture and in total 34 households were randomly chosen and successfully interviewed
- Results in this study were analysed for statistical significance, e.g. increased susceptibility of fish to diseases at 250g. See report for further details

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Cage culture then

- Fish cage culture first started on the Lo River in 1978. The number of households adopting this form of peri-urban aquaculture continued to expand as both increased seed availability and credit schemes became readily accessible
- Mass mortalities in 1995 resulted in a dramatic decline in the number of cages but despite this 84 households with over 100 cages still have fish cage culture as an activity in Tuyen Quang Town (TQ town)

Cage culture now

- Over two thirds of the cage farming households interviewed in TQ town had land and most families had 1 or 2 cages, located near the family home. Almost all cages were constructed from bamboo as this material is light, cheap and robust, but individual farmers adopted various construction strategies
- Grass carp has a high domestic market value, particularly in rural areas and the value of 1kg of grass carp is equivalent to 1 full day spent fishing or 3 days making handicrafts. Cage culture blended well with the other activities but was intended as a means of accumulating savings by over half of the farmers interviewed



Cage size	0.7-10 8m ²
Cost of Cage	0.2-5 million VND
Cost of Shelter	0-0.6 million VND
Cost of fish seed	0-4 million VND

14,000 VND = US \$1

- Seventy two percent of farmers stocked grass carp and the size ranged from 7g to 2kg. In theory, poorer farmers stocked smaller fish and it was found that fish less than 250g in weight were more susceptible to health problems. A single production cycle was intended to last two years, but few farmers were able to achieve this. Some had to emergency harvest their crop due to diseases and others had to remove fish to provide money to feed their family. Only 22% of cage farmers interviewed had successfully completed a full production cycle and harvested at least one cage since stocking

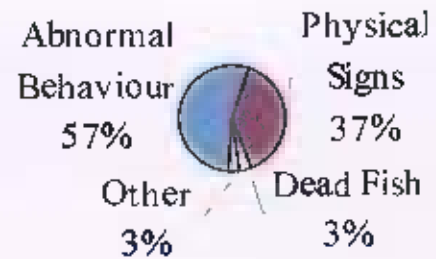
Institutional context

- Government loans are available for cage farmers but it is a complicated process to obtain a loan. The maximum amount of money received is 5 million VND per household and this is used to buy materials to build cages, fish seed and provide a shelter on the cages
- The shelter on the cages may be accommodation for the household or a small hut where the guard sleeps at night
- Security in the form of a house or land is required as collateral by the bank and only 10% of the cage farmers were able to provide this by themselves. The majority of households had to join associations that then provide the required collateral

- Currently, loans must be repaid within 2 years, with a monthly interest rate of 0.8% and half of the total loan must be repaid within the first year. One key informant estimated that 75% of cage farmers could not pay back the loan in time
- If households are unable to repay the loan back then the Bank can 'freeze' the payments for 3 years or extend the loan for a further 2 years until the families are able to repay the money borrowed. It is almost impossible to obtain another loan if there are outstanding debts



How Farmers Recognise Unhealthy Fish

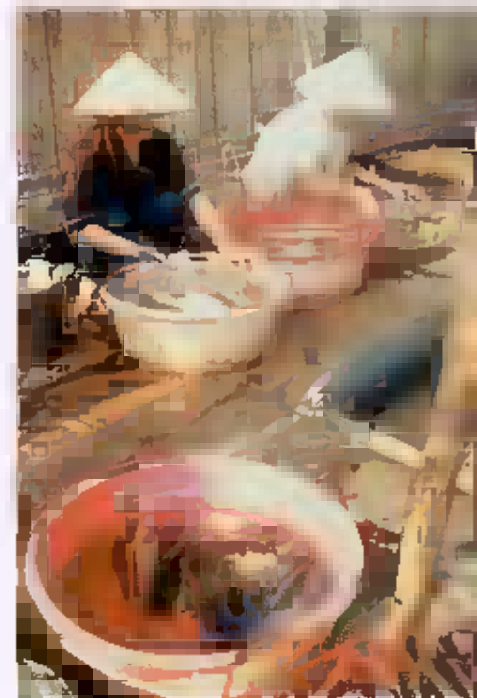
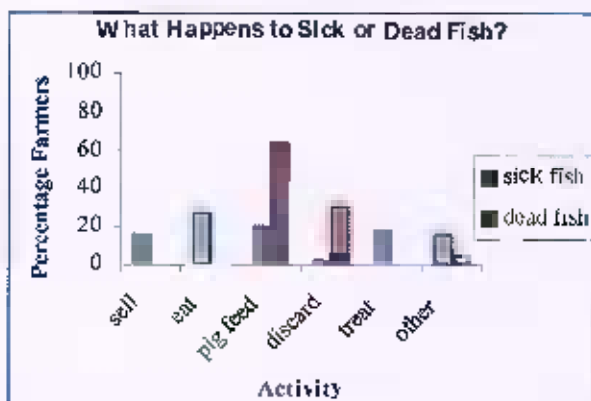


What are the problems?

- Nearly 90% of farmers had problems and over 80% reported fish losses due to diseases as a major constraint to producing a successful harvest. Cage damage, electrofishing and poor environmental conditions also occurred resulting in fish losses
- Disease outbreaks were reported during the wet season when the environmental conditions deteriorated and there was an increase in water turbidity
- More than half of the farmers found that disease was most common in fish less than 250g. They recognised fish health problems using various behavioural and physical signs
- A variety of infections or environmental conditions could have produced the fish health problems described by the farmers

Dipping into the savings fund

- Culturing fish in cages appears to be a gamble taken by poor people to accumulate assets and reduce poverty
- Cage culture has risks that often result in incomplete production cycles and premature harvest
- Early detection of sick fish can allow an emergency harvest. The farmers can then either use fish to feed the family or sell them. However, sick fish are worth only half as much as healthy fish
- Nevertheless, farmers that suffer fish mortalities are still able to use these fish as a protein source in pig feed
- Cage farmers may also harvest some healthy fish prematurely to provide a daily income or as food for the family



Managing risks

- Sophisticated husbandry skills allow fish health problems to be detected early
- Emergency or premature harvesting mean farmers can still gain benefit from sick fish
- Recently some farmers have stocked their cages with another species of fish. A native carp, Ca Bong, has become popular either alone or with grass carp. This native fish appears to be less susceptible to diseases
- Stocking fish at 250g were one and a half time¹ more likely to suffer losses from diseases compared with stocking larger fish
- Cages generally became a focus of family activities and division of labour allowed a high level of care
- Fish farmers try to reduce disease problems using available treatments
- Communes provide support and guidance for the cage farmers, aiding dissemination of information