

Self-recruiting Species in Aquaculture: Their Role in Rural Livelihoods

Case Study V7

Tam Tang Village, Thang Loi Commune, Van Giang District

1. Introduction

1.1 Schedules and Persons Involved

This study was carried out between May 31, June 25 and July 2, 2001. The RIA1-AIT team first visited the village on May 31 and worked on the PRA process on June 25 and July 2. After collating and translating information obtained at Tam Tang village on July 2, the team had a 'debriefing' with villagers on July 2. The RIA1 for the fieldwork consisted of

1. Kim Van Van
2. Nguyen Huu Hoa
3. Nguyen Chien Van
4. Bui Ngoc Thanh

1.2 District Commune Description

Van Giang district is the Northwest of Hung Yen province. It lies some 20 km Southeast of Hanoi city centre and a ridge of Red river. The total area of the district is 71.79 km² and the population 92,000 people. Despite its location, **Most** of the households of the district are engaged in agriculture and the average per capita income of the district is a rather low VND 3.02 million (US\$208). Increasing in economic is about 8%. 5,05% of the households in the district are classified as poor (old criteria).

The district was chosen as representative of the delta fringe and riverside dike ponds of the Red River delta. The district slopes steadily from west to east (from dike to field). The western edge of the district in fact has a dike of Red River with 6 communes lie alongside the Red river and suffer from over bank flooding from the river and 5 others in the field. It was decided to select three villages from two communes along a transect from west to east (from out of dike to inside dike). Tam Tang village of Thang Loi commune lies out dike and near the river, Phu Dinh of Thang Loi commune sit two sides of Red river dike and Vinh Tuy village of Lien Nghia commune is in the field. The characteristics of two communes are summarised in Table 1.

Table 1: Natural and Social-Economic Characteristics of Selected Communes

Variable	Thang Loi Commune	Lien Nghia Commune
Topography	Out and on side of dike	On and in side of dike
Total Area (km ²)	4.83	5.27
Land Area (ha)	No data	500
Agricultural Area (ha)	197	319
Agriculture Households (%)	98	100
Population Density (person /km ²)	1335	1594
Poor Households (%)	7	3
Average income VND mil. / person	2.5	5.3
Water Surface Area Used (ha)	36.06	40.31
Water Surface Area Unused (ha)	115.53	21.28
Aquaculture Systems	Semi-intensive, Extention	Semi-intensive, Extention
Species culture	Grass car, Silver carp, Common carp, Indian carp	Grass car, Silver carp, Common carp, Indian carp
Wild fish	Hel. river catfish, shrimp	Crab, <i>Carissius auratus</i> , <i>Anabas tes</i> .

Source: Van Giang Agriculture and Rural Development; Selected Commune Offices. In 2000-2001

Notes from commune meeting

1.3 Selection Process for the Village

Once the tentative commune sample framework had been established, the RIA1-AIT team began its work by making an appointment with Mr Kien, a staff of the District Department of Agriculture and Rural Development (DARD) in Van Giang district for the afternoon of May 31. A meeting was hold in DARD office. Mr. Kien said that the land around dike is higher than land in field so that most communes side dike concentrated in field crop and fruit tree plant. The communes in the field concentrated rice cultivation. Then a visitation to Thang loi commune and some other communes. An introduction to Mr. Nguyen Van Hai, chairman and Mr. Thieu Van Vuong, Land management of Thang Loi People's Committee, details of the constituent villages of the commune were obtained. Thang Loi Commune comprised 9 villages as follows:

- | | |
|-----------------|--------------|
| 1. Phu Bai | 150 families |
| 2. Phu Thuong | 220 families |
| 3. Phu Dinh | 120 families |
| 4. Tan Loi | 120 families |
| 5. Duong Thuong | 120 families |
| 6. Duong Ha | 160 families |
| 7. Xam Trong | 195 families |
| 8. Xam Hong | 200 families |
| 9. Tam Tang | 140 families |

All villages have not rice cultivation, but only field crop and ornament tree and fruit plant. It was stated that Tam Tang and Phu Dinh villages contained large number of poor

households. Tam Tang villages lie on a ridge of Red river (out side of dike) and Phu Ding village sits on two sides of dike. The size of the villages was suitable for PRA. One of these, Tam Tang, and Phu Dinh were chosen.

The team immediately secured an appointment with village leaders in Tam Tang including

1. Mr. Thieu Van Toan (Village Head)
2. Mr. Thieu Duc Vuong (Land management)

On the basis of which an appointment was made to begin work that same afternoon.

2. Setting the Context

2.1 Mapping the Current Resource Context

Figure 2.1 presents the village resource map. This was drawn by Mr. Thieu Duc Vuong, land manager in communal house where the meeting was taking place. Tam Tang village sits on a ridge of Red river and surrounded concentrically by field crops and apple tree. The roads, canals, kindergarten and communal house are shown. The main area of aquaculture ponds also appear to be in this part of the village.

2.2 Mapping the Development of the Village (Timeline)

Figure 2.2 shows the timeline of key points in the village development. Information was supplied by Mr. Thieu Xuan Chau, 76 year old, Mr. Do Dao Thuc, 64 year old, Mr. Tran Phu Quyn, 45 year old and Mr. Thieu Ngoc Thuat, 55 year old. They stressed political events. Most events as flooding were often mentioned in Tam Tang village in 1945, 1969, 1971, 1996. The only economic item of note mentioned, was the foundation of the co-operative in 1959, helping groups were established, at this point the co-operative took control of the land and the whole village worked together and divided the production evenly and in 1988 the government distributed land to individual farm households. The policies for using land were also changed, but the living standard of people have started improving from 1994 due to changing suitable plants as mint, fruit plant, medicine tree, etc. The main village road was constructed in 1999-2000 and in 1994 electricity reached the village.

2.3 Mapping the Social Context: Well-being Ranking and Criteria

Well Being Ranking Criteria

Rank	Trial 1	Trial 2	Trial 3
	Thieu Van Toan, Head of village Thieu Huu Dang, Youth Union	Nguyen Thi Chien, Women Union	Thieu Ngoc Thuat, Party Labour Do Dao Thuc
1	Enough food, lack money to spent, widow, often sick, poor knowledge, their children stop learning early. Most HH haven't TV, template houses. Some young HH just get married & separated from big families.	Many old HH, live a lone, widow, enough food, lack money, children stop learning early, get risks, diseases, sick, lack furniture & equipment, simple & small houses, small land.	Old HH, live a lone, often sick & diseases, many risks in working, no TV, radio. Template houses.
2	Most old people & young families just separated. Have some money, some HH have TV, get some risks in working lead to more difficult economic	Bigger houses & larger land than G1, Most of young couple get some risks, no TV, no castle, have some money.	No stable economic, normal income, lack investment, young kids. The couple just get married & separated, lack furniture.
3	Enough money, have TV for 70%. Young families had married for 5-10 years, have normal furniture & houses, have knowledge, & more castles.	Most HH have enough furniture & money, their children finished secondary school.	Enough labour & investment, thinking lead to work. Their children have good conditions for studying in level 1, 2, 3. Fairly enough furniture.

4	Fairly good economic, some HH have flat roof of houses & expensive furniture, good conditions for taking care children. Have castle.	95% of HH have color TV. Some HH have motorbike, flat roof of houses, good conditions for children studying.	Big investment, good working & knowledge, enough furniture & good conditions for children studying.
5	Good economic, have investment, get some lucky in products, good knowledge, have flat roof of houses, TV. Some HHs have motorbike.	Spare money. Most HH have motorbike, 100% HH have color TV & flat roof. Their children can finish high school or college or university.	
6	Some HHs work for gov. employed have salary, have investment, they live happier, flat roof of houses, color TV, expensive furniture as box, spare money. Their children could study in high school, college or university.		

- Social Structure of the Community: Community includes 9 villages, each village has some groups. The positions in community: Chairman, vice chairman, accountant, chairman of party labour, vice chairman party labour, Young union, Women Union, Old People union & Army Union. The positions of persons in each village are the same, but at level of village.

2.4 Summary/ Key Points

- Tam Tang village sits on a ridge of Red river surrounded concentrically by delta with field crop and apple tree.
- The village often occurs flooding in rainy season.
- Wealth Ranking criteria:

- Poor Households:
 - + Lack of knowledge, often old live a lone, young married, some widows, get risks in working
 - + Enough food, small land, small, simple or temperate houses, lack money, facilities, furniture, farm equipment & investment.
 - + Their children often stop learning early.
- Fairly Poor:
 - + Old people, young couples, young kids, get some risks in working
 - + Have a house & simple materials but still lack investment.
 - + Have some money, no table economic, normal income
- Medium:
 - + Enough money, 70% HH have TV, have normal furniture, and houses, enough labour and investment.
 - + Their children often finish secondary school.
- Fairly Rich:
 - + Fairly good economic
 - + Know how to produce, 95% HHs have colour TV, some HHs have flat roof of houses, motorbike, good and expensive furniture.
 - + Good conditions for children studying.
- Rich Households:
 - + Good knowledge, big investment, their children can go to high education, college or university.
 - + Good materials, good houses, even motorbikes, telephone, and spare some money.
 - + Most of them get other income out of agriculture.

3. Activity Profile of the Village

3.1 Seasonal Calendar

Figures 3.1–3.4 present the annual calendar of activities for the different social groups in the village. There are small but not significant differences in the perception of the weather, with some groups emphasising temperature and others rainfall, storm or wind. Nor are the differences in the social events mentioned events mentioned especially significant; it may be noted that there are festivals and ceremonies in almost every month, some of them traditional, others promoted by the state.

In relation to economic activities, the calendar for all groups shows no rice cultivation being practised. All groups are engaged in field crop cultivation. Maize, beans and peanuts are planted in February and harvested in May-June; one tomato and vegetable crop in winter is planted in September, October and harvested in December, January, this crop is after flooding season. Fruit plants as small apple, orange and kumquat are planted in February, March and harvested in November, December and January. Medicine tree is planted in February and harvested before flooding season.

All groups were also engaged in livestock cultivation, although the poorer households have less number of chickens, duck and pig than rich people. It was shown in flocks, with the poor concentrating on rearing of pigs, duck and chickens, while the better off had a wider range of stock including cattle.

From this analysis, there are clear peaks in the labor demands and income flow from agriculture. Families are extremely busy in February, March, May, June and November, December-January, while the main income streams appear particularly concentrated in May-June and December-January, especially just before the Tet New Year. Interestingly poor men claim to be busy throughout the year. For poor women have wage labour in local as carry soil, water. All groups mentioned tired, fever in summer and changing weather, cold and cough in children in winter.

3.2 Group Activity Profile

Some of these differences are reflected in the group activity profiles.

Poor Women

Name Activities	Nguyen Thi Nguyen	Tran Thi An	Le Thi Theu	Le Thi Thuoc	Hoang Thi Yen	Total
Field crop	3	3	4	5	5	20
Livestoc k		3	2			5
Medicine plant	3	3	3	3	3	15
Planting fruit tree	5	7	4	6	5	27
Trade	3		1	3	3	10
Take care children	6	4	6	3	4	23
Total	20	20	20	20	20	100

Poor Men

Names Activities	Thieu Ngoc Thuat	Do Dao Thuan	Thieu Ngoc Dau	Thieu Ngoc Xoan	Total
Field crop	6	5	6	6	23
Medicine	6	7	4	5	22

Plant					
Livestock	6	3	4	3	16
Take care children	2	5	6	6	19
Total	20	20	20	20	80

Rich Women

Activities \ Names	Nguyen Thi Khanh	Thieu Thi Than	Le Thi Yen	Total
Field crop	2	2	2	6
Fruit plant (Apple, litchi, organ)	7	6	7	20
Livestock	5	2	4	11
Medicine Plant	3	3	4	10
Trade	1			1
Working ship		5		5
Take care children	2	2	3	7
Total	20	20	20	60

Rich Men

Names \ Activities	Thieu Van Tach	Lam Thien Thuan	Thieu Huu Vuong	Thieu Van Manh	Total
Field crop		5	6	2	13
Livestock	7	2	3	3	15
Planting fruit tree	2	3	6	8	19
Sub occupation (Tofu)	3				3
Take care children	8	10	5	7	30
Total	20	20	20	20	80

These are summarised in Table 3.1. It will be noted that all households rank fruit plant growing high on the list after that is medicine tree and the better-off men rank take care children highly. They place relatively little importance on wage labour.

Table 3.1. Activities summary:

FAIRLY POOR		FAIRLY RICH	
Women	Men	Women	Men
Fruit tree plant	Field crop	Fruit tree plant	Take care children
Take care	Medicine plant	Livestock	Fruit tree plant

children			
Field crop	Take care children	Medicine plant	Livestock
Medicine plant	Livestock	Take care children	Field crop
Trading		Field crop	Soya curd
Livestock		Shipping	
		Trading	

Several other points are worth noting. These include:

- The important of fruit tree for all groups is related to the colonisation. The difference with other places, fruit tree is planted in field lump this with field crop and medicine trees. For take care children, men groups mentioned it is more important than women groups, for rich men put this activity on the top of activity list.
- The fact that poorer men did not mention fruit tree, they tended to lump this together with field crop.
- For wage labour activity is not important in this area because with field crop activity need more time than other activities, so that most of time in all year is busy except flooding season.
- Between poor & rich group have difference opinions about livestock: poor group concern to pig and rich group concern to cattle, pig, chicken & duck and with high number of animals. Because for poor people lack investment.
- The overall low ranking of fish culture, only rich men group mentions it in economic activities, but forget in ranking.

4. Role of Aquatic Animals

4.1 Species Ranking

Figures 4.1-4.4 present the ranking of the main aquatic animals according to their importance in livelihood by the different groups (poorer men, poorer women, better-off men; better-off women) in the village. On the basic aquatic animal species were supported by all groups. Six highest important aquatic animal species were chosen.

Figure 4.1: Poor Women

Species \ Criteria	Delicious	Available	Cheap	Easy buy	Few bones	Total
Silver carp	3	3	3	3	3	15
Grass carp	4	3	1	1	4	13
Indian carp	3	3	2	4	3	15
<i>Annabas tes.</i>	1	2	2	2	2	9
<i>Carassius auratus</i>	1	2	3	2	2	10

<i>Misguruus fossilis</i>	4	1	1	1	4	11
Snake head	4	1	1	1	4	11
<i>Hemibaglus clongatus</i>	5				5	10
<i>Bagarius. sp</i>	5				4	9
<i>Hemiculter leucisculus</i>	1	3	3	2	3	12
<i>Cynoglossus. sp</i>	4				3	7
<i>Squaliobarbus curriculus</i>	3	2	2	2	2	11
River catfish	3	1	1		3	8
Common carp	4	1	1	2	3	11
Snail	2	3	4	2	2	13
Crab	1	3	3	2	1	10
Catfish	4	1	1	1	4	11
Shrimp	3	3	1	3	4	14
Total	55	32	29	28	56	200

Figure 4.2: Poor Men

Criteria Species	Avai labl e	Easy to buy	Chea p	Del ici ous	Easy catc h	High nutri ent	Few bone s	Tota l
<i>Cranoglanis sinensis</i>	1	2		3	1	2	1	10
<i>Clupanodon. sp</i>	2	1		3	1	3		10
Catfish	1	1		3		1	1	7
River catfish	1	2		3		2		8
<i>Annabas tes.</i>	3	3	4	1	2			13
<i>Squaliobarbus currculus</i>	1	1		2	1	2		7
Silver carp	6	2	4	2	3	3		20
Common carp	5	2	1	4	3	3		18
Indian carp	6	2	3	4	3			18
<i>Misguus fossilis</i>	1		1	2		2	1	7
Small wild	2	3	1					6

fish								
Shrimp	4	3	1	4		5		17
Grass carp	5	1	2	3	3	3		17
Water snake	2			1		3		6
Snail	1	1	1		1			4
Feshwater clam						2		2
Crab	2	2		3	2	3		12
Snake head	2			3			1	6
Frog	1			2		2	1	6
<i>O.pagalense</i>	1			2		2	1	6
Total	47	26	18	45	20	38	6	200

Figure 4.3: Rich Women

Criteria Species	Availa ble	Cheap	Few bones	Deliciou s	Fit money	Total
Grass carp	5		5	5	5	20
Silver carp	9	9			9	27
Shrimp	3		3	6		12
Crab	2	2	2	2	2	10
Indian carp	10			10	10	30
Annabas tes.	2	1		2	3	8
Snail	2	2	2	1	2	9
Freshwater clam		3	2	2	3	10
Snake head	2		4	10		16
<i>Carassius auratus</i>	5	3			3	11
<i>He. leucisculus</i>	5	2		1	3	11
Common carp	6		6	8		20

Frog			2	4		6
River catfish			3	2		5
<i>O. pagalense</i> & <i>Mis. fossilis</i>			3	2		5
Total	51	22	32	55	40	200

Figure 4.4: Rich Men

Criteria Species	Availa ble	Delici ous	Few bone s	Grow fast	Easy catch	High valu e	Tota l
Common carp	2	4	1	2	1	5	15
Grass carp	3	3	2	4	1	4	17
Silver carp	3	2		3	1	2	11
<i>He. leucisculus</i>	2	3	2		2	3	12
Indian carp	3	3	2	3	2	4	17
Snake head	1	4	3		1	6	15
<i>Cranoglanis sinensis</i>	2	4	3		2	5	16
Water Snake	1	2	1		1	5	10
Frogs	2	2	1		2	3	10
Snail	2	1	2		3	1	9
<i>O. pagalense</i>	1	3	2		1	3	10
Crab	2	1	2		3	1	9
Shrimp	2	3	4		3	5	17
River catfish	2	2	2		1	3	10
<i>Squ. curriculum</i>	1	2	1	2	1	2	9
<i>Annabas tes.</i>	2	1			3	1	7
<i>Carassius auratus</i>	1	1			2	2	6
Total	32	41	28	14	30	55	200

It will immediately be apparent that the ranking is similar in all groups. They emphasised cultured species, but only rich men mentioned to fish culture, all other groups bought it. They liked fish culture due to wild fish is reducing and fish culture are available. Most people in this village mentioned silver, Indian, common and grass carp, especial grass and

Indian carp were mentioned by all groups. Poor women have not mentioned common carp and rich men has not also mentioned silver carp. This is very suitable with their capacity in finance. All groups mentioned shrimp.

For criteria, most groups mentioned delicious, available, few bones, cheap. For men mentioned easy catch due to sometime, they could catch wild fish in river.

Important Aquatic Animals - Summary:

Poor		Rich	
Women 18 Species	Men 20 Species	Women 15 Species	Men 17 Species
Silver carp	Silver carp	Indian carp	Grass carp
Indian carp	Common carp	Silver carp	Indian carp
Shrimp	Indian carp	Common carp	Shrimp
Snail	Shrimp	Grass car	<i>Cranoglanis sinensis</i>
Grass carp	Grass carp	Snake head	Common carp
<i>Hemiculter leucisculus</i>	<i>Anabas tes.</i>	Shrimp	Snake head

Important Criteria - Summary

Reasons	Criteria	Poor		Rich	
		Women	Men	Women	Men
Consumes	Delicious	55	45	55	41
	Available	32	47	51	32
	Cheap	29	18	22	
	Easy buy	28	26		
	Few bones	56	6	32	28
	High nutrition		38		
	Easy catch		20		30
Culture	High value				55
	Grow fast				14
	Fit money			40	

5. Aquatic Animal Seasonality and Trends

From figure 5.1-5.4 shown that all groups like cultured fish due to available, tasty. Poor people mentioned cheap fish culture as silver carp, rich people mentioned delicious fish culture as common carp. Most groups mentioned that they bough more fish in spring and winter, this point is suitable with stocking and harvesting season. In flooding season, they could catch some cultured fish due to fish escaped from pond culture. The price of silver

carp is cheaper in early of month and of year and more expensive in the end of month, of year.

6. Aquatic Animal Trends

Poor Women

Periods Species	Before 1960	60- 70	70- 75	75- 80	80- 85	85- 90	90- 95	95- 00	After 2000
Silver carp	Increasing			In. due to artificial breeding just successful			Dec. by capacity is low		
Indian carp	Dec.			Dec.			Increasing		
Shrimp	Increasing Environment was not polluted					Dec. effected by bad environment			
Snaile	Stable By contacting lake and pond so not free catching								
Grass carp	Stable wide fishes				Increasing culture more				
<i>Hel. leucisculus</i>	Increasing Few people catch					Dec. catch more and by a lot of ways so quantity is decrease day by day			

Poor Men

Periods Species	Before 1960	60- 70	70- 75	75- 80	80- 85	85- 90	90- 95	95- 00	After 2000
Silver carp	No institution of contacting, species were developed widely and less exploited, a lot of lagoons, lake and pond			Dec. by dam up to stop water for agriculture, ponds were contacted but don't know how to culture be better, exploit more in wide habitat			In. Government invested for culturing and new seeds		
Common carp	as silver carp								
Indian carp	as silver carp								

Shrimp	Stable	Dec. area of surface was decreased , no special culturing system for shrimp , excessive exploitation, bad environment , using chemical poison in agriculture
Grass carp	as Silver carp	
<i>Anabastes</i> .	as Shrimp	

Rich Women

Periods Species	Before 1960	60-70	70-75	75-80	80-85	85-90	90-95	95-00	After 2000
Indian carp	local carp like Indian carp				Increasing just imported and economic species				
Silver carp	Stable wild fish				Increasing A lot of culturing, economic, available seed				
Common carp	a lot in wide habitat					Stable			
Grass carp	lack of seed					Increasing			
Snakhead	a lot in wide habitat					Dec. no culturing, wide fish is decrease			
Shrimp	normally, shrimp were available					Dec. No culturing, many people catch, treated pond by chemical			

Rich Men

Periods Species	Before 1960	60-70	70-75	75-80	80-85	85-90	90-95	95-00	After 2000
Grass carp	- less culture, lack of seed				Increasing cultured by new methods				Dec. Disease
Indian carp	Increasing wild fish				Dec. wild fish were decrease by environment				
Shrimp	Increasing many in wild habitat					Dec. effected by environment			
<i>Cranoglanis sinensis</i>	as shrimp								

Common carp	as Indian carp	
Snake head		- decrease rapidly by environment - Environment become bad day bay day

All groups in the village like cultured fish and some of wild fish as shrimp, Hel., snake head, but recently wild fish were decreasing due to damaged equipment as electric shock. Most groups mentioned that fish culture are increasing due to develop seed & technique, but for rich men mentioned that all cultured fish are also reducing due to environment and disease. Poor women mentioned that silver carp is reducing due to their living standard start improving so that not many people like.

7. Cross checking

7.1 Transect Walk

Land manager and head of village taken us to around the village with the map and shown temple, apple field, ponds, people living, Red river has wild fish & where water resource over flooding to and where they could catch wild fish.

7.2 Farmer meeting

- Shown the map of their village which some people had drawn one week ago and required them shown some places and asked them which parts were not correct, please drawn up. After that summary their activities and which aquatic animal they like & some questions were talked out:

- All groups have not rice cultivation and only field crop. This activity includes medicine tree, fruit plant and vegetable. This activity is an important economic activity in this area for all groups. Livestock is less important activity in this area. Only, rich men group mentions fish culture.

- All groups like cultured fish due to available

8. Summary/ Key Points

- Most of groups have same ideas about weather as temperature, rain, sun, wind and storm, about social events as mid month, International women day, festival, kill insect day, children new year and Tet.
- All groups have not rice cultivation activity
- The most important activity is field crop includes medicine tree, fruit plant and vegetable. Apple is planted in February and harvested in the end of year, medicine tree, maize, soil bean are also planted in February and harvested before flooding season. Vegetables are planted after flooding season and harvested before New Year.

- Most groups did not mention fish culture and fishing, but only rich men mention a little to fish culture.
- All groups like cultured fish due to available, tasty and fit price as silver carp, Indian carp, grass carp and common carp. Wild fish is reducing and fish culture are increasing, but for rich men mentioned all fish species are reducing due to pollute environment and disease and poor women mentioned that silver carp is reducing due to it's value.