



## Small-Scale Integrated Farming in the Philippines

**T**he International Institute of Rural Reconstruction (IIRR) is a private voluntary organization based in the Province of Cavite, about 40 km south of Manila. Its mission is to generate knowledge on how best to enable rural people in developing countries to improve their lives, and to share this knowledge with other rural development organizations, leaders and workers throughout the world.

Several years ago, the livelihood staff of IIRR identified small-scale fishfarming as a promising rural activity in the Philippines. In 1981, they sent a team to be trained in the integrated farming techniques being developed at Central Luzon State University (CLSU) in a cooperative research project between the Freshwater Aquaculture Center of CLSU and ICLARM. Through this project small-scale pig-fish and poultry-fish farming technologies were designed, tested and packaged. The fish used was the Nile tilapia (*Oreochromis niloticus*).

The information gained by the IIRR team at CLSU was disseminated in a five-day training course for selected barangay (village) scholars. These scholars were people selected and financially supported by village communities. After the training course the scholars were responsible for setting up demonstration ponds in their villages and promoting the technology.

Fourteen barangay scholars underwent training and built ponds in their villages. They influenced a total of 45 villagers and farmers in their neighborhoods to begin integrated farming.

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*Top left:* The 200-m<sup>2</sup> pond of Rodolfo Commandante (facing camera) supplies all his family's fish needs. Carabao manure is used to fertilize the pond. *Top right:* Rodencio Commandante (left) and his father stand near the family's 600-m<sup>2</sup> pond. Their 5-pen piggery overhangs the pond. All photos by Ramon Estarez.

In 1986, we visited some of the farms with Mr. Frank Fermin of IIRR who has been the driving force in the integrated small-scale fishpond project in Cavite.

The barangay scholar movement has stopped temporarily. Altogether, about 20 farmers in the Cavite area, which is mainly irrigated riceland, have continued to use the basic principles of integrated farming developed by the CLSU-ICLARM researchers. Some farmers harvest and restock every six months; others harvest selectively the larger fish on a regular or irregular basis.

Rodolfo Commandante has a family pond of about 200 m<sup>2</sup> partly shaded by two massive mango trees at one end of his farm. The pond produces enough tilapia for the family, and freshwater mussels, which grow fast in the pond substrate, are a bonus crop. There are no pigs but the farm's working carabaos (water buffaloes) supply more than enough manure to fertilize the pond.

Rodencio Commandante, a relative, manages a 600-m<sup>2</sup> pond on his father's farm. A 5-pen piggery overhangs one corner of the pond and the manure is washed regularly into the water.

A few kilometers away is the farm of Mr. Egsequel Putante who has a large piggery which supplies manure to four ponds by a system of pipes and canals. He supplements the manure with piles of rice straw and buckets of rice bran.

There are no major problems in production of tilapia in these farm ponds, although the fish are said to be slower growing now than when the ponds were constructed in 1982. General concern has been felt throughout the Philippines that the Nile tilapia broodstocks are genetically "contaminated" by *O. mosambicus*, a slower-growing species which tends to reproduce at a small size and overpopulate the ponds with stunted fish. Genetic studies have proven that such contamination exists.

A detailed socioeconomic survey of six small-scale fish farmers and the problems they faced in implementing the integrated farming technology was carried out by IIRR during the first year of the project. It showed that the economic



Rodolfo Commandante harvests mussels from his backyard pond.

Financial analysis for the average (460-m<sup>2</sup>) barangay scholar tilapia fishpond; one grow-out cycle averaging 166 days. (P8.50 = US\$1.00 at the time of study.)

	Pesos		Pesos
<b>Gross income</b>		● noncash expenses	
● cash: value of fish sold	310	— imputed (opportunity) value of own and family labor	165
● noncash: value of fish consumed by household or given away (tilapia, tilapia fingerlings and snakehead)	1,006	— opportunity cost of operating capital (9% prorated over 166 days)	6
<b>Total cash and non-cash income</b>	<b>1,316</b>	<b>Subtotal</b>	<b>171</b>
<b>Expenses</b>		<b>Total cash and noncash expenses</b>	<b>365</b>
● cash expenses		<b>Net cash income</b>	
— feeds	103	<b>Cash income minus cash expenses</b>	<b>116</b>
— land rental	55	<b>Net return to own inputs (labor and capital)</b>	
— meals for unpaid helpers	20	<b>Total cash and noncash income minus cash expenses</b>	<b>1,122</b>
— irrigation fee	11		
— fertilizers	5		
— fingerlings (1,000)	free from BFAR*		
<b>Subtotal</b>	<b>194</b>		

\*The Bureau of Fisheries and Aquatic Resources (BFAR) provided free fingerlings of Nile tilapia for the project. At the time the selling price was about P0.10 each.



Frank Fermin of IIRR makes a point in discussing the "barangay scholar" scheme.

prospects for "backyard" fishponds and their contributions to household nutrition were favorable. The table on this page shows a summary analysis, which indicates there is some profit to be made as well as a supply of good quality fish.

The results of the survey were presented by Mr. Fermin at a workshop on Philippine Tilapia Economics held jointly by ICLARM and the Philippine Council for Agriculture and Resources Research and Development (PCARRD) in August 1983. The full proceedings of the work-

shop including the analysis of the IIRR project were published at the end of 1985 and are available from ICLARM as are the detailed results of the CLSU-ICLARM integrated farming experiments (write to the Editor, ICLARM, for details).

PCARRD summarized the techniques and economics of the CLSU-ICLARM work into an extension booklet entitled "Integrated Fish-Pig Farming," Technology! Series Vol. IV, No. 9, 1982, available from PCARRD, Los Baños, Laguna, Philippines.

## Lore of the sea

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