

# Philippine Brackishwater Aquaculture Training Project

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The Brackishwater Aquaculture Development and Training Project, a cooperative effort of the Government of the Philippines, represented by the Bureau of Fisheries and Aquatic Resources (BFAR) under the Ministry of Natural Resources (MNR), the United Nations Development Programme (UNDP), and the Food and Agriculture Organization of the United Nations (FAO), became operational in April 1977. The author was project leader, representing FAO/UNDP until the project was completed in early 1983.

The UNDP/FAO/BFAR Brackishwater Aquaculture Development and Training Project was created to establish a competent inland fishery extension service. Technology had developed through trial and error in the private sector and to a lesser degree through research by various research institutions. Southeast Asia, and especially the Philippines, Indonesia and Malaysia depend on brackishwater aquaculture to supplement consumer market supplies. Virtually all brackishwater production in the Philippines is based on culture of the milkfish (*Chanos chanos*). The area under milkfish production is around 190,000 hectares.

A wide disparity between high production by a few fish farmers, and low production by the majority of fish farmers became a concern of the Government of the Philippines in the late 1950s. The average annual yield is around 650 kg/ha. The Government succeeded in gaining external support from UNDP and FAO to demonstrate and field test the most progressive technology on private milkfish farms.



By 1973 it was clear that although a few additional fish farmers had adopted better aquaculture practices, it would take a large number of field workers to change the practices of the fish farming

industry. The BFAR was reorganized during this period and the Fisheries Extension Division was created. Many of the field workers assigned to the new division were technical people who had worked on hatcheries or demonstration stations. Others were persons with biology or fisheries-related degrees who had been assigned office duties. Some were casual or temporary employees who had eligibility for Civil Service employment and fell into newly created positions. Less than 10% were technically competent to perform extension duties, and virtually 100% were untrained in extension methods.



The Demonstration and Training Center at Calape, Bohol. *Top*: buildings and pond development; *center*: trainees preparing wooden water gates; *bottom*: growout ponds.

An evaluation two and one-half years after the project began showed little improvement in the skills of the extension workers.



A new approach, live-in practical training, was then introduced. A manual for extension officer training was prepared. Course design and development of demonstration farms were synchronized to provide high quality practical training to about 330 participants. A management scheme was established to determine the difference in productivity under different climatic conditions. Training participants designed and constructed ponds and gates, nets and other tools, and assisted in pond management. Some participants, those who showed outstanding aptitude, were selected as Demonstration and Training Center staff.

Four Demonstration and Training Centers (DTCs) were constructed and staffed. One Center was constructed in each of the four climatic zones of the country, in the provinces of Bulacan, Quezon, Bohol and Lanao del Norte. They now operate as technical support centers, as well as a training venue for groups of fish farmers and extension workers who come to the centers to see applied technology and share experience in fish farm management.

A goal of increasing average annual milkfish production to 1,200 kg/ha was



Housing and ponds of the Demonstration and Training Center at Lala, Lanao del Norte.



The Pagbilao, Quezon Province, Demonstration and Training Center, with staff and guest houses foreground, the training hall upper left, and dormitory and office upper right.

formulated. This intermediate range technology was chosen, not without protest, because it was generally agreed that once that level was reached cooperators could make further progress if economic return warranted. The level of 1.2 t/ha was not achieved on all four DTCs until after the second year of demonstration and training which showed that even BFAR fish farmers were not disciplined in the management technology required to support the project production goals. This was a good point to show extension workers because they could relate to the difficulty of timely purchase and use of inputs and careful stock manipulation required for the "Philippine Improved Milkfish Production System".

Training courses for extension officers run for a total of 14 weeks, with 60% field work and 40% class work. ICLARM economist Dr. Kee-Chai Chong spent several weeks lecturing to groups in each of the four DTCs during courses in early 1983.

As well as training large numbers of extension workers, the project produced informative extension materials. A series of five filmstrips dealing with brackish-water fishponds and fish utilization was prepared. Three of them follow the development and management of a pond by a young college graduate with help from an extension agent. They are all available from BFAR with texts in English, Pilipino, Cebuano and Ilocano.

Also produced were loose-leafed manuals on Fishpond Management; Fish Handling, Marketing and Distribution; Fishfarm Engineering; Fishfarm Economics; Manual on *Artemia* Production in Salt Ponds in the Philippines; and the Fisheries Extension Officers Training Manual.

Project success can be attributed to the wholehearted support given by the Government, and especially the BFAR to achieving project objectives. This commitment, in turn, can be attributed to the FAO personnel's constant effort to keep the BFAR informed, as well as working within the Government system. These are things important to the success of any externally assisted project.



Trainee extension personnel conducting field work in fishpond engineering at the Pagbilao DTC.



Classroom work at a DTC. Trainees spend 40% of course time in lectures and seminars.