



Asian Aquaculture

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RP starts pilot aquaculture support system program

The Philippines has set into motion an aquaculture industry development support scheme. The pilot project, called the *Aquaculture Resource Management Program*, is a joint undertaking of four entities — two regional, one national, and an academic institution. These are: the Philippines' Bureau of Fisheries and Aquatic Resources, Development Academy of the Philippines, Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), and Southeast

Asian Fisheries Development Center (SEAFDEC) Aquaculture Department.

The project model provides for two components: a macro component which covers the aquaculture-rich island of Panay comprising the four provinces of Iloilo, Aklan, Antique and Capiz; and a micro or village level component which, in this pilot stage, is operational at four selected sites, one site being a cluster of three *barangays* or villages. The produc-

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OI, SEAFDEC in joint R & D venture

The SEAFDEC Aquaculture Department has entered into another collaborative venture, this time with the Oceanic Institute, a non-profit marine science center based in Hawaii, calling for joint activities in research and development particularly on milkfish, transfer of developed technology, and exchange of information.

In a memorandum of agreement formally signed on October 7 during the visit of top OI officials to the Aquaculture Department main station at Tigbauan, Dean D.K. Villaluz, Department Chief, and R.W. Power, president of the Oceanic Institute agreed to work out the possibility of integrating aquaculture

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Oceanic Institute President R.W. Power and SEAFDEC Aquaculture Department Chief D.K. Villaluz wish each other success after signing the OI-SEAFDEC memorandum of agreement for a collaborative aquaculture research and development venture.



Oceanic Institute President, R.W. Power (left) and SEAFDEC Aquaculture Department Chief, D.K. Villaluz sign agreement. Witnesses to the signing are (seated) Dr. Richard Neal of the Oceanic Institute and Dr. Joseph C. Madamba, director of the Asian Institute of Aquaculture. Standing (l-r) are Engr. Vicente Alferes of the SEAFDEC Freshwater Aquaculture Station; Department Personnel Chief, P.L. Torres, Jr.; Research Director Jose A. Eusebio; Dr. Ching-ming Kuo of the Oceanic Institute; and Atty. J.M. Garay, director for Administrative Services.

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methods, products and techniques between the two research institutions. The Department and OI will (a) *exchange scientists and technologists*; (b) *exchange breeding materials* (e.g., fry, etc.) and *germ plasm*; (c) *exchange scientific literature, information and methodology*; and, (d) *import and export seedstock and scientific equipment for common programs*.

These will be implemented through mutual scientific and technical relations; creation of facilities for exchange of scientists, technologists, and experts; and grant of fellowships to scientists and graduate students, as recommended by either the OI or through the Department, for SEAFDEC member countries and other developing countries in Asia. Findings from collaborative researches shall be

published by mutual agreement. Both OI and the Department will also establish links between their respective similar scientific research centers and institutes.

Meanwhile, Work Plan No. 1 has been finalized to undertake a cooperative effort over an initial three-year period to develop methods and systems resulting in breeding milkfish in captivity in order to be able to supply seed for stocking in ponds in Southeast Asia and other areas where milkfish farming is important for food production.

A Cooperative Program emphasizing artificial propagation, induced breeding, and larval rearing of milkfish has been formulated for implementation next year. Specifically, the Cooperative Program seeks to develop and define an optimum induced-spawning procedure for

milkfish and develop a method for larval rearing and fry/fingerling production.

A team of selected staff members from OI and the Department will undertake the work in two locations: at the Department's facilities in the Philippines from March 15 to May 16, 1979; and at OI in Hawaii from June 15 until August 15, 1979.

The OI team consists of Dr. Ching-ming Kuo, Mr. Craig Paulsen, and Mr. Wade O. Watanabe plus 3 technicians and 1 postdoctorate fellow; and Dr. Jess Juario, S. Hara, Herminigildo Sitoy, Marietta Natividad, Gerald Qunitio, Jesse Banno, Nephronia Jumalon, Jose Canto, Jr., Pedrito Bombeo, Rito Bombeo, W. Esteba, and R. Calibjo, plus 20 fisheries aides, from the Department. Three to four OI team members will stay in the Philippines for the cooperative work and two to three Department team members will stay in Hawaii.

The Oceanic Institute is a non-profit private marine science center founded in 1960. It seeks to secure scientific and technical knowledge through research and development for the wise use of the ocean and its resources, and to share that knowledge with the peoples of the world. It undertakes projects to increase the production of food from the sea, with its attendant responsibilities of protection and conservation; improve mankind's compatibility with the aquatic environment

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Joseph C. Madamba (representing the SEAFDEC Aquaculture Department), SEARCA Director General J.D. Drilon, Jr., and DAP Executive Vice President J.P. de Jesus.

The reason the BFAR director has been selected committee chairman is that, after 1980 — the end of the project life span — the Bureau will take over the project and implement the scheme in other sites. Total budget requirement of the project is ₱2.1 million spread out into ₱0.3 M in 1978, ₱1.4 M in 1979, and ₱1.4 M in 1980.

Agency Roles

The Development Academy of the Philippines is the lead agency in the development and installation of the macro component; SEARCA will work on the *barangay* or micro level. SEAFDEC will provide the lead role in technology packaging and communications support as well as 60 percent of the project cost while BFAR will shoulder 40 percent of the total funding and take active part in both the village level (micro) and Panay-wide (macro) components of the system.

BFAR, SEAFDEC conduct mobile training *(from p. 8)*

fishfarmers. Demonstration has to be more regular with a genuine extension service which intervenes most often. Technical assistance will be provided by trained extension officers or instructors and by the monitors and assistants. They are responsible at the same time to provide fry of *Tilapia nilotica*, free of charge, to individual fish-farmers as well as to dispense advice on feeding and fertilizers suitable for fishes. Fishfarmers have to provide their own feeds and fertilizers. Up to the present, no particular disease has been reported. However, if they do occur in the future, health inspection and disease control will be undertaken through the laboratory of the Maritime and Lagoon fishing directorate or of the hygiene service.

The budget for the experimentations and the pilot demonstrations is provided annually by the Government. Extension has to be more compact and continue with the private or rural fishfarmers since the present extension personnel is still very insufficient despite all the good intentions. Thus, it is urgent to train extension agents to be able to implement genuine aquaculture extension services to achieve the objectives projected in aquaculture. □

Information source for the article is the report, "National Aquaculture Development Plan in Ivory Coast," which was translated from the original French text to English by Weena Sornchai of the Asian Institute of Aquaculture.

SEAFDEC nursery

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density of 100 to 200 fry per m². At a 45-day period per operation, including pond preparation, the set-up is therefore capable of undertaking about 6 to 8 operations per year which means it can accommodate from 15 to 40 million fry in the same period, Apud reported.

For inquiries on the construction and operations of the nursery pond, communicate with Florentino P. Apud, Jr., P.O. Box 256, Iloilo City, Philippines, 5901. □

ected BFAR personnel from all regions in the country on small-scale prawn hatchery operations preparatory to the setting up of demonstration village-level prawn hatcheries in BFAR training centers.

BFAR is the agency of the government of the Philippines, under the Ministry of Natural Resources, which is responsible for the development of fisheries and aquatic resources in the country. Headed by Director Felix R. Gonzales who is the current chairman of the SEAFDEC Council of Directors, the Bureau has regional stations strategically located for the conduct of various training programs, some of which have complete facilities for continuing research.

Meanwhile, the Aquaculture Department has just completed a 4-day training in prawn culture (*Penaeus monodon* F.) in Zamboanga City, Southern Philippines

involving 50 pond owners and their technicians, from October 25 to 28. Topics discussed by resource persons from the Department included prawn broodstock development, small-scale hatchery, pest and predator control, feeding and diets, as well as problems and potentials in prawn farming. Held under the auspices of the Asian Institute of Aquaculture, the training was conducted on the request of milkfish pond owners in the area who have taken interest in farming *P. monodon* as existing ponds for milkfish are readily converted to grow this crustacean. Agencies which assisted in the training were BFAR, the Mindanao Regional School of Fisheries, the Armed Forces of the Philippines South Command (AFP Southcom), and pond owners' associations in the area. □

Ferrocement tank for sugpo *(from p. 5)*

To insure a uniform distribution of dissolved oxygen, a piping system that distributes water equally in the tank was needed.

The project also required a filter system to improve water quality and at the same time provide a substrate for the prawn broodstock. Another need was to have an adequately illuminated area in the tank into which the broodstock can be drawn and examined for ovarian maturation.

The total cost of materials for one unit whose components include the ferrocement enclosure, PVC piping system, electrical system, filter system as well as finishing amounted to ₱5,363.90 (₱1.00 = US\$0.137).

The enclosure cost ₱1,785.40, the piping system which made use of PVC pipes was ₱2,593, the electric system came up to ₱784, the filter system ₱90.00 and finishing was ₱110.50.

Details of the design and construction methods may be requested from Engr. R. T. Solosa, SEAFDEC Aquaculture Department, P.O. Box 256, Iloilo City, Philippines 5901. □

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through interest in both basic research and the practical needs of today's demanding society; maintain the quality of life of man through the study of aquatic plants and animals and preserve the heritage of the sea for future generations through education and management of resources.

The Aquaculture Department of the Southeast Asian Fisheries Development Center is a treaty organization established on July 9, 1973 among six nations, namely, Malaysia, Singapore, Thailand, Vietnam, the Philippines and Japan and is charged with the responsibility of developing aquaculture in Southeast Asia. It has succeeded in completing the life cycle of the prawn, *Penaeus monodon*, from broodstock development, breeding, and larval rearing under controlled conditions and culture in ponds and pens to marketable size. It has also succeeded in induced breeding and larval rearing of milkfish, *Chanos chanos*, under controlled conditions and artificial breeding and larval rearing of *Scylla serrata*, *Portunus pelagicus* and others. □