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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.

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tion sites are located in the following townships: Barotac Nuevo in Iloilo Province for milkfish production; Pontevedra in Capiz for "sugpo" (tiger prawn) and other crustaceans; Sapian in Capiz for mollusks; and Batan in Aklan for an appropriate and suitable aquaculture commodity mix. The last site, Batan, is an "economically depressed area with a high potential for the establishment of a fish farming industry."

Concept

An industry system consists of three elements — the support, production and marketing systems. The support system includes provision of production inputs like fry, feeds and fertilizer, credit and financing, transportation and handling of inputs, the required fish farming technology, and infrastructures. The production system will essentially be composed of fish farmers organized into viable aquaculture production units. This is envisioned to be effected through the organization of fish farmers' association operating at the barangay or village level. The third element includes: post-harvest handling, marketing, processing, storage, distribution and other essential services and infrastructures to enable the production units to take optimum advantage of market opportunities. (See box.)

Integrated Area Approach

The support and marketing elements will be organized and implemented at the regional (Panay-wide) level. The four institutions as well as other organizations and service agencies such as the National Economic and Development Authority (NEDA), colleges/universities, regional

offices of ministries concerned, etc. working in Panay Island will be involved in the provision of these elements. A mechanism that links the production units back to the support system and forward to the marketing system will be developed to come up with an integrated area approach to aquaculture development, keeping in mind the reality that aquaculture enterprises operate within a milieu of other agricultural and non-agricultural enterprises existing in the same area.

Technology Transfer

Since aquaculture will be used as the main point of entry to the village, a vital input is a package of appropriate aquaculture technology which will be introduced to the production units. The package includes the technology, sociology, economics, and communications components. While the socio-economics component will largely be influenced by the organizational patterns and production systems obtaining at the micro level, the communications component will be designed to provide the communications support to the whole project in general but especially to the production units.

In effect, the pilot project is a technology transfer scheme which at the same time provides for the verification of technology at the farmers' level. The packaged technology to be introduced to the villages are being collected, and processed and put together into a form ready for adoption. Institutions involved in the selection and packaging of such aquaculture technology are: the SEAFDEC Aquaculture Department, the University of the Philippines College of Fish-

eries, the Bureau of Fisheries and Aquatic Resources, and progressive fishfarm operators in the private sector.

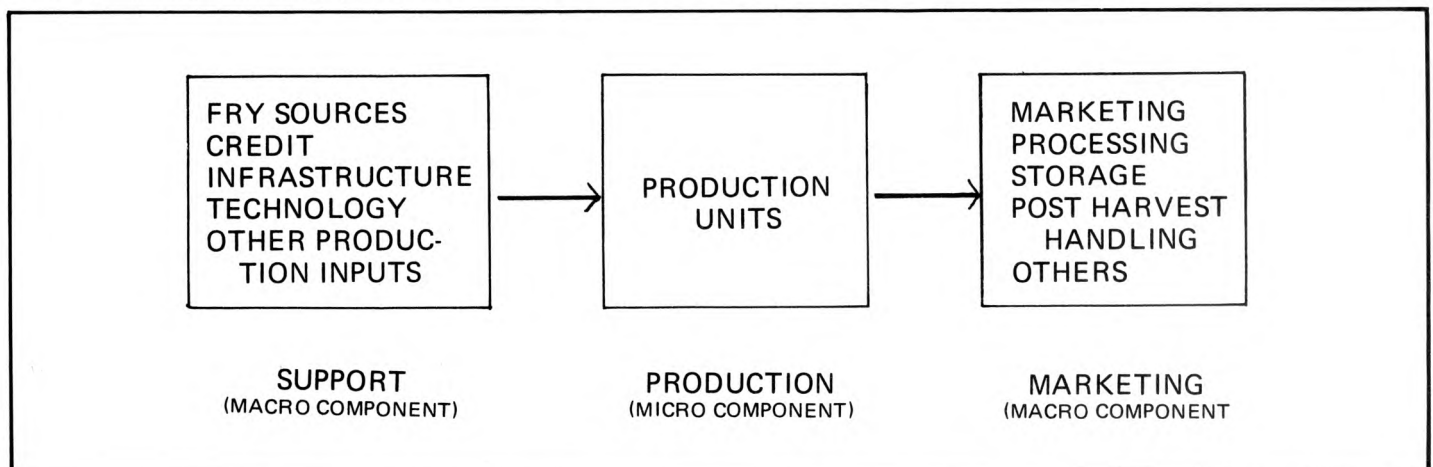
How these packages are adopted and utilized by the production units will be constantly monitored and evaluated so that, ultimately, one end product of the pilot scheme will be field tested aquaculture technology.

Field Implementation

Five implementing activities have been identified: (1) *organization development* which involves the formation of fishermen's associations; (2) *innovation package operations planning* to translate technology packages into a form suited to the production units as well as the support and marketing systems; (3) *systems installation* which involves making necessary negotiations and arrangements for the support and marketing strategies to be responsive to the needs of the production sector; (4) *adoption* which involves the training of the fish farmers on the various aspects of the technology and on such vital areas as financial management, marketing, resource utilization, production and processing; and (5) *the phase-out and expansion* activity which will be done as soon as the associations can manage the activities on their own, the systems and schemes have been evaluated, and steps have been taken for expansion into other areas.

Management

The project is run by a management committee, the highest decision and policy making body of the program. It is composed of BFAR Director Felix R. Gonzales as chairman, and AIA Director





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.



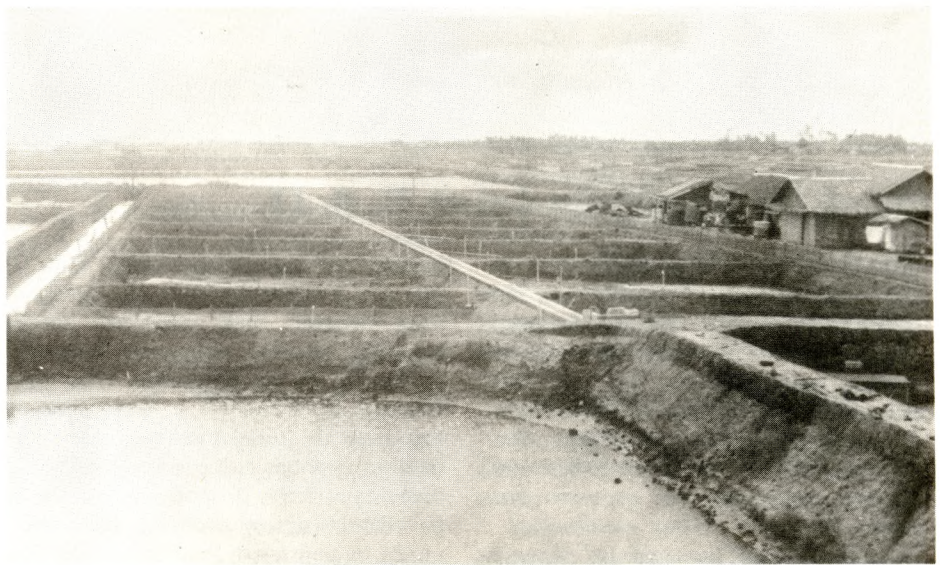
SEAFDEC nursery pond system solves prawn fry survival problems

The Philippines has a long history of aquaculture predominated by bangus farming in brackishwater ponds. Pond operators increasingly find that when they harvest their fish, they also harvest prawns which accidentally enter the pond during regular water change or which are stocked unnoticed along with bangus fry. They are also finding that they would earn much more if they could harvest more prawns as these command a much higher price than bangus.

The Aquaculture Department is popularizing sugpo farming not only because of high demand for this item both in the local and export markets, but also as a means of increasing food production, improving nutrition and raising employment and income levels in the villages. For a start, beginning 1974, the Department provided pond owners, initially in the Island of Panay, with sugpo fry produced from its hatcheries. This encouraged many pond owners to join the Fishpond Cooperators Program — a research-production scheme — which the Department set up to gather benchmark information on various traditional ways employed in farming sugpo and to encourage the application of scientific techniques in the fishfarm.

One constraint has since surfaced. Pond owners have observed that sugpo fry caught from its natural habitat fare better in the rearing or grow out pond. Is it possible that hatchery-bred fry are less resistant?

In 1975, the Department reported a survival rate of 2 to 30 percent from nauplius stage to P₁₂-P₂₁. The then Training and Extension Division reported a 10.38 percent over-all survival of hatchery bred-fry made available to the first group of Fishpond Cooperators (rearing from P₁₁-P₁₄ until marketable



The sixteen units 200 m² ponds with a supply canal, made of concrete hollow blocks, running through the center and with drain canals on both sides. Foreground is a portion of two reservoir ponds which provide enough water with optimum salinity.

size) and 9.3 percent survival for the second group. The Cooperators attributed the low yield to unviability of fry and suggested further tank rearing of post-larvae preferably up to P₂₅ or P₃₅ approximating the age of fry caught from the wild. But that would mean longer hatchery operations and added expense not to mention problems such as space, feeds, stress, cannibalism, etc. An answer had to be found.

To increase survival of prawn fry up to marketable size, the Department launched the improved pilot nursery pond system. This improved design and operation — from all indications so far — has become the vital link between the hatchery stage and the grow out pond phase. By enabling the harvest of hatchery-bred sugpo fry as early as P₄ and P₅ and by providing prawn juveniles that are fit and

ready for stocking, the pilot nursery pond system has solved the critically long gap between the hatchery and the grow out pond.

Project leader Florentino P. Apud, Jr. of the Pond Research in Prawn, who came up with the idea, implemented it, and since its start of operation in mid-1977, has been constantly improving its results has reported that since the start of operation of the SEAFDEC 1 ha pilot prawn nursery pond system sometime in the middle of 1977 about 80 to 90 percent of the hatchery produce in Tigbauan has been accommodated at stage P₂ to P₄ or P₅. *This has raised hatchery production by about 100 percent.* A sizable quantity of juveniles (about 775,000 excluding those not harvested in ponds) was produced from July to December 1977 alone and another half million in the sec-

Ferrocement tank for sugpo maturation

ond quarter of the year 1978. During the first quarter (summer months) Hatchery and Nursery undertook major repairs, hence operation was minimal. Sizes produced range from 0.4 g to 1.5 g at stages P₃₀ to P₄₀. These sizes were just appropriate for stocking in grow out ponds and were preferred by pond operators, Apud claimed. Of the total harvest, about 57.73 percent went to SEAFDEC Fishpond Cooperators in the Visayas; 23.6 percent were retained in the Leganes Station for further pond experiments in grow out ponds up to marketable size; 17.8 percent went to Cooperators in Luzon and for experimentation at the Binangonan Station; and 0.93 percent for experiments at the Aquaculture Department main station in Tigbauan.

According to Apud, demand has increased so that a commercial size nursery pond system had to be established. The system has 24 pond units of 1,000 m² each, equipped with separate supply and drain canals and reservoir system for effective water management. It also has a centralized concrete catching pond and a harvest center for effective harvest of prawn juveniles.

These harvest facilities are important because they minimize stress and increase convenience in handling, storage and packing for transport. The harvest center is provided with elevated filtered sea water tanks, an aeration system and storage room for ice. Ice is used for acclimation or reduction of water temperature and maintaining the same at 22°C during transport.

Once in full operation, the set-up will be capable to accommodate from a minimum of 2.4 million fry to a maximum of 5 million fry per operation at a stocking

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A practical, easy and economical method of constructing ferrocement tanks highly suitable for sugpo (*Peneaus monodon*) maturation has been developed. This was contained in a paper submitted for publication to the prestigious *Journal of Ferrocement* by Rodolfo T. Tolosa of the SEAFDEC Aquaculture Department.

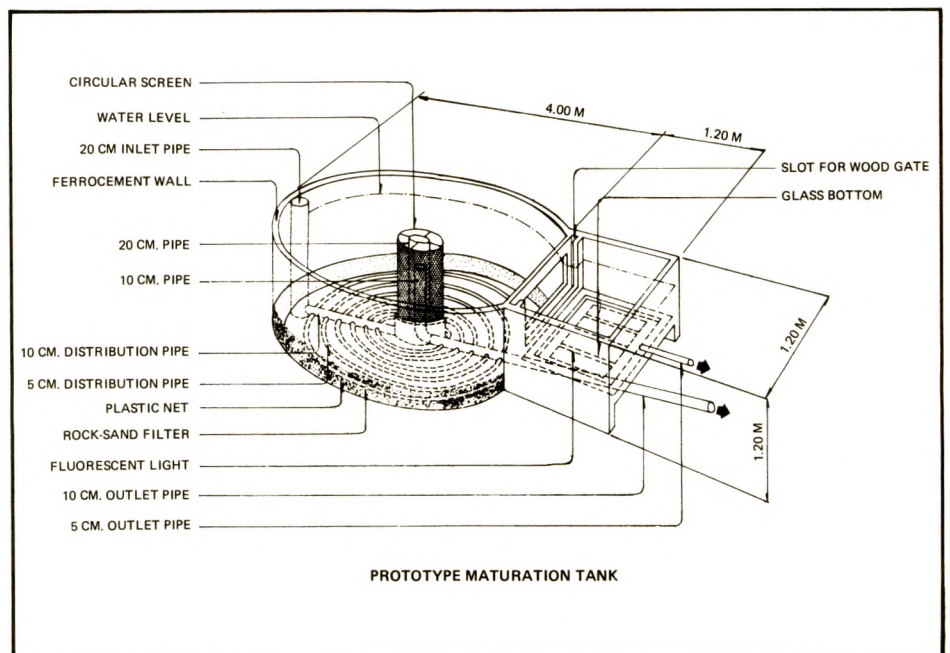
Engr. Tolosa said three 12-cu m cylindrical tanks had been built and now in operation while one 25 cu m capacity is being planned for construction.

The tank has two components — a cylindrical portion which is 4 m in diameter and an auxiliary rectangular portion measuring 1.2 x 1.2 m. The prototype design provided for a holding structure made of ferrocement with a thickness of about 4 centimeters only (see isometric drawing of prototype).

The enclosure can accommodate 80 adult prawns at a 1:1 male to female ratio. For this purpose a volume of about 12 cu m and a water level of 1 m were deemed sufficient, Tolosa reported. The research consideration made it necessary to have a tank in the form of a cylinder to provide greater convenience in the movement and circulation of the prawns. Other design considerations were that materials used for the enclosure had to be readily available, durable and with a low thermal conductivity. The inside surface of the wall had to be smooth to prevent injury of prawns.

A flowthrough system of water supply instead of the aerated stagnant water type was used. A flowthrough system has the advantage of renewed water and a minimum build-up of pollutants in the tank.

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Aquaculture development plan in Ivory Coast

Fish production in 1974 was 74,000 tons, of which 12,000 tons came from inland waters and about 10 tons from fish culture in ponds.

Importation in 1974 was 86,000 tons of fish for a total consumption of 160,000 tons. This deficiency in fish production was made up by the importations valued at CPA. F. 7,000 billion.

Annual per capita fish consumption is 25 kg in the next ten years for a total projected consumption of 240,000 to 350,000 tons. Marine water culture will provide 40,000 to create 45,000 tons while aquaculture is expected to supply 15,000 to 20,000 tons.

Objectives

The long term objective of the plan is to eliminate deficiency in animal proteins especially in the northern part of the country. This can be achieved through aquaculture development, by utilizing all the means in the regions where there is adequate water supply and sufficient local agriculture by-products for fish feed. For this purpose, it is necessary to establish fish farms, rural fish culture in ponds and integrated with the rearing in rice valleys, floating cages, racks and enclosures rearing in lakes, lagoons, rivers and mangroves.

A medium-term goal in Ivory Coast is to consolidate the practices which have already been undertaken and to extend the fisheries techniques which are rectified through the fisheries researches Centre of Bouaké (CTFT-Cote-d'Ivoire), the FAO/(UNDP)/AVB/IVC 526 project at the lake of Kossou, and the Abidjan University in the experimental fish farm-houses and production, rural pond fish-culture with the associated rearing of pig and poultry, floating cages, racks and enclosures in the fresh and brackish water.

Meanwhile, the immediate need is for the continuation of extension in rural areas by establishing new ponds with better surroundings to suit hydro-agricultural management if possible. It is necessary to create a pilot farm of fish culture

in order to establish the financial viability of fish culture in all its forms as well as to pursue intensively all the researches like feeding, reproduction, fry stocking, cages, racks, enclosures, etc.

Production Targets and Means

The planned production targets aimed to cover the deficiency of 100,000 to 125,000 tons will be achieved through the following methods:

a) Construction of 1,550 ha of rural pond fish culture integrated with pig and poultry rearing.

b) Construction and exploitation of 3,000 floating cages, racks and enclosures rearing in lakes, lagoons and mangroves for an estimated production of 6,000 tons.

c) The exploitation of 10 private and mixed pilot fish farms covering 100 to 110 ha which should yield 1,000 tons.

d) Construction of 500 ha of rice racks that is estimated to produce 100 tons.

Systems and Species Selected

The results of fisheries researches at the Tropical Fishery Technical Centre of Bouaké have shown the feasibility of certain systems of fish raising which can be expanded. In pond culture, good results have been obtained from the monoculture of *Tilapia nilotica* fed with rice or cottonseeds. Yields have ranged from 3 to 5 tons of fish/ha/year.

The polyculture of *Tilapia nilotica* with a predator (*Lates niloticus* or *Clarias lazera*) gives better outputs ranging between 6 to 8 tons by using rice bran or ground cottonseeds. This system is still under the experimental stage.

Technological Situation

Application research results has provided an advance technology in respect to monoculture and polyculture of *Tilapia nilotica*. Technology is being demonstrated in respect to the use of artificial fish food made out of agricultural by-products like rice bran, ground cottonseeds, (parche de) coffee, palm-nutcakes, cotton, copra, brewer's grains.

The training of the average cadres higher staff, controllers or assistants is well in advance. The extension techniques of *Tilapia* culture in the rural areas are also being well established.

The experimental stage concerns the natural production of the fry stocking of *Clarias lazera*, improvement of artificial fish feed through the formulation of feeds composed of local agriculture by-products, fish raising in floating cages in the lakes, natural reproduction and stocking of certain species which have economic potentials such as *Chrysichthys*, *Heterobranchus*, *Auchenoglanis* and *Macrobrachium*.

Demonstration operations are done at the fry stations with *Tilapia* and *Clarias*, *Tilapia* and *Lates*. Pond fertilization is also being demonstrated.

Training of Core Personnel

The demands of core personnel to achieve the targets are divided into two levels:

Subordinate Staff: Instructors or fish extension workers; extension personnel who should be trained on the spot. The estimated demand is: short term – 14 instructors, medium term – 80, and long term – 457.

Medium Staff: Fisheries monitors and assistants for which the minimum requirement is the Brevet d'Etudes du Premier Cycle (BEPC) and preferably a baccalauréat. The duration of training is from 8 to 10 months. The medium staff is a technician in aquaculture able to manage a commercial fish farm and to supervise extension-workers. The estimated demand: short term – 5 medium staff; medium term – 20; long term – 118.

Extension Services

Demonstration has been going on for several years through the routine operations of the fisheries stations of the state in the under-prefectures and the villages. They aim at stimulating the interest of peasants and individuals in practicing fish culture in ponds and at improving rearing practice by teaching the rural and private

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

(from p. 5)

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. □

OI, SEAFDEC in joint R & D

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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. □

BFAR, SEAFDEC conduct mobile training for fishfarmers

The Bureau of Fisheries and Aquatic Resources of the Philippines and the SEAFDEC Aquaculture Department will undertake a mobile training program for fishermen and fishfarm operators in the Philippines to be implemented immediately and covering an initial five-year period.

Called the BFAR-SEAFDEC Mobile Training and Extension Program, the joint undertaking seeks to accelerate the training, *in situ*, of subsistence fishermen and small fishfarm operators on appropriate aquaculture technologies; set up strategic demonstration projects in various regions of the country; and contribute to the national effort of increasing food production.

Following surveys conducted by the Asian Institute of Aquaculture on training needs and technology desired in the regions to be served, BFAR and the Department will implement the program in phases. Phase 1 will be implemented in the Central Visayas, Eastern Visayas, and the Bicol regions this year. It will cover pond development and the farming of milkfish and prawns in five-day sessions targetted to serve from 250 to 350 participants or 50 to 70 farmers per training site. The sites that have been initially chosen are Tacloban City, from November 6 to 10; Tanjay, Negros Oriental, November 9 to 13; Calape, Bohol, November 12 to 16; Cebu City, November 15 to 19; and Sorsogon, November 17 to 21.

Participants attending the program will shoulder their travel, board, and lodging expenses. The Bureau will select and prepare the training sites, select the partici-

pants, and make available its extension facilities through its regional centers. The Department, on the other hand, will produce all training materials and will share with BFAR other training costs. Resource persons from the Aquaculture Department, BFAR, universities, fisheries schools, and aquaculturists of pond owners associations will be tapped to provide lectures, demonstrate proven technologies, and supervise practicum activities. A joint management team composed of the heads and representatives

of AIA and BFAR will oversee the conduct of the training activities and the evaluation of the program.

Subsequent phases of the program will cover other regions in Luzon and Mindanao.

The joint program also calls for the Department to conduct a trainers' training program for BFAR extension workers early next year in anticipation of their heightened role in the mobile training program, and a special training for sel-

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Chinese Mission at SEAFDEC

The Peoples' Republic of China mission visited the SEAFDEC Aquaculture Department, 17-18 October. Led by Deputy Minister Shih Lin (center) of the Ministry of Economic Relations with Foreign Countries, the mission is shown touring the research facilities of the Department and those of the University of the Philippines in Iloilo at the Leganes station.

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