



Asian Aquaculture

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Aquaculture production goals should be attainable with the necessary financial investments, scientific expertise, technological inputs, and support services. Provision of these is crucial to the development of aquaculture in Third World countries.

SEAFDEC Aquaculture Department Marks 5th Year

The SEAFDEC Aquaculture Department is now five years old.

In fitting ceremonies July 7 to 9, highlighted by a review of accomplishments by officials of key divisions, the Department marked its first five years as one of three major arms of the Southeast Asian Fisheries Development Center — a multi-national treaty organization committed to the development of fisheries in the region.

In five years, the Department has grown from a 15-man task force working in make-shift research and administration huts to a community of 600 highly-skilled research and support personnel providing the lead role in aqua-

culture research and development in Southeast Asia. The research facilities now includes eleven stations equipped with modern research hardware. Over the past few years, the Department has chalked up a number of research breakthroughs, notably in prawn — a high potential dollar earner, and milkfish — an important food item for the masses.

The beginnings of all these can be traced to the pioneering research work of Dean Domiciano K. Villaluz, the Chief of the Aquaculture Department, who has steered the Department through its first five years. Early in his career

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Fish farming is an age old practice — said to have started in Egypt 2,500 years ago — but a relatively new significant industry in most countries of the developing world. Its expansion and development has become the focus of interest of international, national and non-governmental agencies for its potential role in increasing food production, human nutrition, rural development, employment generation, and environmental management. However, as an industry, it suffers from inadequate support services and scarcity of well-trained practising aquaculturists; as a science, it has not benefited from a well-organized interdisciplinary systems-oriented research.

This is the gist of an FAO/UNDP report on the recently concluded Consultation on Aid Requirements for Aquaculture Development held in Pontevedra, Spain on 20-23 June, 1978. The consultation was sponsored by FAO/UNDP with participants coming from six international agencies and six countries including the Philippines. Participants from the Philippines were SEAFDEC Aquaculture Department executive director, Q. F. Miravite and newly appointed Asian Institute of Aquaculture director, Joseph C. Madamba.

Prospects

The consultation noted that of the total 70 million tons annual world fishery production, aquaculture contributes some 6.2 million tons of which

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Aquaculture Dept. in Five Years...

as a fisheries man, Villaluz, former dean of the College of Fisheries of Mindanao State University — which was the implementing agency for establishing the Aquaculture Department in the Philippines — drew attention to the life requirements of the developing world and inspired the Filipino aquaculturists, a new breed of scientists today, to work on alternative and more efficient ways of producing low-cost protein food for the people as well as opening new opportunities for rural employment.



Dean Domiciano K. Villaluz

Background

From a task force of 15 members from the Mindanao State University in 1972, then 82 staff members in 1973, the Department's personnel force rose to 425 in 1975 then to 600 in 1977. Its main station at Tigbauan, Iloilo, Philippines, was inaugurated in April 1975. Just as the actual research work began, it became necessary to establish outreach stations to support the main station especially for prawn and milkfish spawners as well as sites for seafarming projects. As of the close of 1977, the Department has set up 10 research substations in various parts of the Philippines.

The Department was established in July 1973 by a treaty agreement involving six nations, namely: Malaysia, Singapore, Thailand, Vietnam, Japan and the Philippines. It is one of three departments organized under the SEAFDEC Agreement; the two others are the Marine Fisheries Training Department in Bangkok, Thailand and the Marine Biology Research Department in Singapore. A Secretariat headed by a Secretary-General based in Bangkok coordinates the functions and programs of the three departments. SEAFDEC was established in 1968.

The Research Score

The research activities of the Department are aimed at the eventual elimination of the need to capture wild spawners and fry from their natural habitat through complete breeding and culture of fish and other aquatic species.

Research projects are presently organized under four major programs: Prawn, Milkfish, Freshwater and Seafarming. Each program covers the following areas: 1) seed production; 2) pond design, construction and management; 3) fish nutrition; 4) control of diseases, parasites and predators; 5) biological manipulation of stocks; and 6) prevention and control of aquatic pollution.

Prawn Program

Prawn researchers of the Department achieved the completion of the life cycle of the *Penaeus monodon* F. Employing the unilateral eyestalk ablation technique first achieved by the Department in 1975, 3,600 prawn spawners were produced in 1977 compared to only 1,360 in the previous year giving a 300% increase in spawner supply and demonstrating the feasibility of mass-producing sugpo spawners under laboratory conditions.

Studies on the effect of the quality of light on the maturation and rematuration of spawners and on the effect of various artificial diets on maturation, fecundity and egg quality of spawners are in progress.

The Department has concrete prawn hatchery tanks of 50-, 120- and 200-ton capacities which, in full operation, can produce 2.5 million prawn fry per run (18-20 days). This year, the projected production is 2.4 million fry. Studies are being conducted to solve hatchery problems such as water quality, parasites and diseases, and spawner quality.

Intensified research has been conducted on the small-scale prawn hatchery in an effort to make available prawn hatchery technology to small operators in the villages as a means of increasing food production, improving nutrition, and raising the level of employment and income at the village level.

The most significant problem faced in prawn pond cultivation is low survival in nursery and grow-out ponds. Research efforts at the Department's ex-

perimental ponds at Leganes, Iloilo — now equipped with a new laboratory complex — are directed towards the solution of this problem.

Milkfish Program

With assistance from the International Development Research Center of Canada, research was conducted on the domestication of wild captured sabalo (adult milkfish), broodstock development from pond-reared milkfish, induced breeding, larval rearing, ecology and pond cultivation and management. Techniques for catching, transporting and domesticating of sabalo have now been perfected.

In April and May, 1977, the Department accomplished a world breakthrough in milkfish research with success in the artificial fertilization and hatching of milkfish eggs. Adult female milkfish spawned under controlled conditions by hormone injection. The feat is a major stride towards solving the perennial shortage of milkfish fry particularly in the Indo-Pacific region. Department researchers are confident that with standardization of hormonal injection procedures, a mature female milkfish may now be induced to ovulate in captivity provided it is not badly injured prior to injection.

Success in the larval rearing of milkfish has also been achieved after conducting a series of experiments involving salinity and food preferences, rearing tanks and rearing conditions, giving rise to optimism in mass producing milkfish fry next year.

Seafarming Program

Mussels and oysters are of major interest to the Department since these are rich sources of cheap animal protein. Research under the Seafarming Program seeks to scale down bivalve farming technology to make it adaptable to rural areas with minimum inputs, to increase food production, improve nutrition and raise the income level of coastal villages. Work has centered on spat surveys to discover new mussel populations. Under a recent grant from the Government of Australia, plans are being prepared for the establishment of pilot farms on oyster culture in four provinces.

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Another recent major research achievement of the Department is the completion of the life cycle of the mud crab (*Scylla serrata*) and the stone crab (*Portunus pelagicus*) with success in larval development under laboratory conditions.

For its Fin Fish Project, the Department has bio-screened 15 species of marine fish out of which seven species represented by six families have shown potential for pond, cage, pen or cove culture.

Freshwater Program

Research studies are being undertaken on freshwater fish species to optimize utilization of lakes, rivers and other inland waters for food production with emphasis on the breeding, rearing and culture of *Macrobrachium rosenbergii*, *Penaeus monodon*, *Chanos chanos*, catfish, tilapia, carp, mullet, eel and others.

In analyzing the ecosystem of Laguna de Bay, the largest lake in the Philippines, Department researchers have found out that the lake is suitable for cultivation of most species, provided that present pollutants that flow into the lake are significantly decreased.

Asian Institute of Aquaculture

In further recognition of its role in regional and international cooperation and to assure concerted effort in developing and disseminating aquaculture technology, the SEAFDEC Council of Directors created the Asian Institute of Aquaculture as a unit of the Aquaculture Department at its 10th meeting in Manila in December 1977.

Before AIA was established, the Department, in cooperation with private, governmental and international agencies had undertaken training activities on the local, national and regional levels in the following subject-areas: Aquaculture Research Methodology, Aquaculture Management, Prawn Culture, Mussel and Oyster Farming, Small-Scale Prawn Hatchery Management, and Fishpond Engineering. Through its Training and Extension Division, the Department has trained over 900 pond owners, extension workers, pond technicians and agency observers since 1974. Forty-one of the trainees involved were participants from overseas. With the establishment of AIA, the training programs will be expanded.



RP Prime Minister Ferdinand E. Marcos congratulates Aquaculture Department officials on the latest research breakthroughs particularly in milkfish. Also in photo are Bureau of Fisheries and Aquatic Resources director Felix R. Gonzales (second from left) and natural resources minister Jose J. Leido, Jr. (extreme right).

TRAINING

Peace Corpsmen Special Pre-service Training and Fishpond Engineering Workshop Launched

The SEAFDEC Aquaculture Department is conducting two training programs this month: a technical pre-service training for 39 new U.S. Peace Corps Volunteers and a workshop on fishpond engineering and related topics.

This was announced by Atty. Jose A. Agbayani, Jr., Head of Training and Extension, Asian Institute of Aquaculture.

The special training for U.S. PCV's which started on July 23 will proceed until August 17. The topics covered in the training are: fish capture, freshwater, brackishwater, mariculture, research, and fisheries administration. The training is designed to help prepare the Volun-

teers for their work as fisheries extension workers and will be conducted initially in the Department's main station at Tigbauan, Iloilo before farming out to selected field sites depending on specialization required.

The workshop on fishpond engineering — scheduled from August 7 to 26 at Tigbauan, Iloilo — seeks (1) to provide a general understanding of the biology of cultured species and their environmental requirements, (2) create awareness and interest among aquaculturists on the inextricable relationship of engineering to aquaculture and (3) extend knowledge and skills in applying biological and engineering principles in the fish farm.

The workshop is open to fishpond owners/operators and their technicians, aquaculturists, faculty of fishery schools offering inland fisheries courses, and agency observers. It will be led by Dr. Juichi Katoh of the Laboratory of Environmental Hydraulic Engineering, Department of Marine Environmental Science and Technology, Tokyo University of Fisheries. This will be the third workshop of this nature conducted by the Department with Dr. Katoh as principal lecturer.

A number of international organizations and governments have signified interest or pledged financial support to specific projects of the Department. Among them are the International Development Research Center (IDRC) of Canada, the Australian Government, the New Zealand Government, the Federal Republic of Germany, the Danish International Development Agency (DANIDA), and the Canadian International Development Authority (CIDA).