Seafdec Aquaculture Department: An overview

The Southeast Asian Fisheries Development Center or SEAFDEC is a regional treaty organisation established in 1967 in response to the global food crisis. SEAFDEC member countries are Japan, Malaysia, the Philippines, Singapore, Thailand, Brunei Darussalam, and the Socialist Republic of Vietnam. The Center has four Departments, each carrying out training and research programs within specified areas of activity.

- Aquaculture Department (AQD) in the Philippines for farming aquatic organisms;
- Training Department (TD) in Thailand for fishing technologies;
- Marine Fisheries Research Department (MFRD) in Singapore for post harvest technologies; and
- Marine Fishery Resources Development and Management Department (MFRDMD) in Malaysia for the wise use of oceanic resources.

The Philippines-based SEAFDEC Aquaculture Department (SEAFDEC/AQD) was established in 1973 to conduct research, develop technologies, disseminate information, and train people in the farming of fishes, crustaceans, mollusks, and seaweeds for food, livelihood, equity, and sustainable development. AQD operates the Tigbauan Main Station (TMS) in Tigbauan, Iloilo as the general headquarters; Igang Marine Station (IMS) in Nueva Valencia, Guimaras for broodstock development and management; Dumangas Brackishwater Station (DBS), Dumangas, Iloilo for brackishwater aquaculture; and Binangonan Freshwater Station at Tapao Point, Binangonan, Rizal for freshwater aquaculture. AQD has conducted numerous short-term training courses on various aspects of aquaculture attended by participants from all over the word with the majority coming from Southeast Asia.

Training courses

AQD offers short-term aquaculture training courses composed of 1020% lectures and 8090% practical sessions including visits to different aquaculture sites. This hands-on approach is complemented by training facilities that include laboratories, computer room, fish/shrimp hatcheries, fish cages, brackish and freshwater farms, and a feed mill plant. All training courses are conducted in English.

Aquaculture Management (Aquamanagement) 3 weeks

Effective management is the key to success of every aquaculture enterprise. This requires that the manager be thoroughly knowledgeable about all aspects of aquaculture operations, from planning to project evaluation. The three-week course aims to develop project managers' skills in aquaculture planning and implementation, monitoring, and evaluation. Specifically, the objectives of the course are to: 1) orient participants with various aspects of aquaculture (breeding and seed production, grow-out operations, feeding management, and disease prevention); 2) develop managerial skills in planning, implementation and evaluation of aquaculture projects; and 3) create awareness among the participants of the importance of social, political, environmental and ecological factors affecting aquaculture business enterprise and vice versa. The training course is designed for middle to top level government planners, executives, bankers, aquaculturists, extensionists, and decision makers. The course covers lectures on farm development, breeding and seed production, grow-out techniques feeding management, and disease prevention as part of the technical module. Some relevant topics concerning coastal aquaculture and resources management are covered. Some of these lectures have corresponding laboratory sessions. The management module covers topics on business management, resource management, enterprise management, and fishery laws and policies. Preparation and presentation of aquaculture feasibility studies are included.

Venue: Tigbauan Main Station

Fish Health Management

(Fishhealth) Five weeks

Fish disease can be microbial, viral, or environmental in origin. Disease occurrence in a fishfarmer's pond or hatchery can severely limit production and result in considerable loss of investment. This five-week course aims to provide theoretical and practical training for government fishery extensionists and aquaculture technicians in the etiology, isolation and identification, and prevention and control of fungal bacterial, viral and parasitic diseases, as well as nutritional and environmental diseases affecting aquaculture production systems. Participants should have a BS degree, preferably with a background in microbiology. The course covers topics on the occurrence and spread of disease in aquaculture operations; microbial disease agents; non-infectious diseases; and disease prevention and control. At the end of the course, participants should be able to recognize diseased shrimps and fish, identify the cause of the disease, apply preventive and control measures to lessen risks of disease, and use appropriate techniques for the preparation of samples for disease diagnosis. Practical work includes fish anatomy and examination of fish specimens; investigation of fish/shrimp mortality cases; preparation of culture media and solutions; microbial analysis; bacterial isolation and identification techniques; bacterial count, demonstration of viral effects, fungal isolation and identification; parasite detection and identification; histological techniques; bioassay; demonstration of anti-microbial sensitivity test; and health monitoring of shrimp larvae.

Venue: Tigbauan Main Station

Management of Sustainable Aquafarming Systems (Sustainableaqua) Five weeks

Aquaculture production has been suffering from adverse effects of indiscriminate application of technological advances. Farming systems that have been tested, verified and proven environmentally-friendly, sustainable, and equitable to society must be promoted and practiced by the aquaculturists. This five week course aims to provide participants with technical knowledge and skills for the actual operation and management of

grow-out facilities for fish, crustaceans, molluscs, and seaweeds. At the end of the course, participants should be able to: 1) select the proper site and suitable species for grow-out culture; 2) apply appropriate engineering and biological principles in designing grow-out facilities; 3) apply suitable farming methods and proper management techniques; 4) apply appropriate harvesting device and post harvest techniques; and 5) analyse the economics of grow-out farming operations. The training course is designed for fishery extension workers, fishery school teachers, aquaculture technicians, and aquaculturists. Lectures on various aquafarming systems are reinforced by actual field and laboratory work such as pond design and construction, cage construction and installation, seeding collection and seaweed planting, pond preparation, stocking, feeding and water management, soil and water analysis, feedmill operation, and post-harvest techniques. Feasibility study preparation is also included.

Venue: Tigbauan Main Station and Dumangas Brackishwater Station

Marine Fish Hatchery (Marfish) Six weeks

With the continuing development of techniques for spawning and larval rearing of marine fishes, there will be less dependence on wild seed stock for grow-out culture. Fish hatcheries play a big role both in stimulating farming activity of various aquatic species as well as in conservation and reseeding efforts to replenish wild stocks. This six-week course aims to provide participants with technical knowledge and skills in operating marine fish hatcheries. At the end of the course, participants should be able to apply broodstock management and spawning techniques; produce natural food organisms; produce fry; and apply appropriate engineering and biological principles in designing marine fish hatchery systems. The course covers seed production of marine fishes such as milkfish, *Chanos chanos;* grouper *Epinephelus coioides;* and seabass, *Lates calcarifer*, from broodstock development to spawning; hypophysation and other spawning techniques; larval rearing techniques; and transport of fry/fingerlings from hatchery to nursery. Laboratory work involves microscopic examination of larval food to determine type, quality, and size; determination of mouth size of larval stages; observation of embryonic stage development; hormone preparation for injection; and *Artemia* decapsulation and enrichment. Practical work covers hormone injection/implantation; spawning and actual larval rearing activities up to metamorphosis; collection of seed from spontaneous spawning in cages; and mass production of larval food.

Venue: Tigbauan Main Station and Igang Marine Station

Shrimp Hatchery (Shrimphatch) Five weeks

Supply of shrimp seed from nature has been inadequate to meet the heavy demand of seed stock for the shrimp farming industry. Today, fish farmers do not have to rely exclusively on wild fry. Hatcheries are capable of producing shrimp year-round. Hatchery-reared fry have a number of advantages over fry obtained from the wild: they're of uniform size, the stock is not mixed with predators, and quantity can be obtained at one time. This course aims to develop skills in operating a small-scale shrimp hatchery including broodstock and nursery, with emphasis on *Penaeus monodon*. At the end of the course, participants should be able to select the proper hatchery site; apply appropriate engineering and biological principles to design hatchery systems, mass-produce natural food, effectively utilize various artificial feeds for the larvae; apply spawning, larval and post-larval rearing techniques; and monitor and detect early signs of disease and implement preventive and control measures.

Course topics include site and species selection; design and construction of hatchery and nursery tanks; larval and post-larval rearing and feeding; harvesting, packing, and transport of fry; and hatchery economics. Participants will conduct broodstock sampling, eyestalk ablation, monitoring of embryonic stages, natural food production, larval rearing, feeding and water management, and harvest and packing.

Venue: Tigbauan Main Station

Fish Nutrition (Nutrition) Five weeks

Aquaculture production depends, on the quality and availability of food in the culture system. In addition to natural food organisms such as phytoplankton and zooplankton, formulated diets are given to meet the requirements of culture species. This five-week course aims to provide the needs of aquaculture technicians and fish nutritionists for basic theoretical information and technical skills on aquaculture nutrition. Participants should have a BS degree, preferably with a chemistry background. At the end of the course, participants should be able to: apply basic principles in nutrition and feeding in aquaculture; formulate, prepare and evaluate diets suitable for aquaculture; apply proper techniques in feed preparation and storage; and apply proper feeding management.

Venue: Tigbauan Main Station

Freshwater Aquaculture (Aquafresh) Four weeks

The rapid degradation of freshwater resources requires discriminate use of existing culture systems and technologies and development of sustainable ones. Freshwater fisheries at present are overexploited resulting in pollution, fishkills, underproduction, and poor genetic strains of fish. The renewed interest in the commercial culture of freshwater fishes (i.e. tilapia, carp, and catfish) positively contributes to food security. This four-week course aims to provide participants with technical knowledge and skills on the artificial propagation and culture of selected freshwater species. At the end of the course, participants should be able to apply broodstock management and spawning techniques; produce fry; produce natural food organisms and artificial feed; and monitor and detect early signs of disease and implement preventive and control measures.

Venue: Binangonan Freshwater Station

Sustainable Aquaculture and Coastal Resource Management (Coastal Management) Five Weeks

Coastal areas are economically important throughout the world, especially in Asia and the Pacific. They support a wide diversity of marine life, significant portions of agriculture, industry, and tourism. The various pressures placed on coastal resources create a need for a more rational, equitable, and sustainable methods to husband the vast coastal waters of Asia and the Pacific. There is a need to disseminate the concepts, principles and practices pertaining to coastal aquaculture and resource management to reconcile the technology and sustainability of development. This five-week course aims to provide participants with technical knowledge and techniques on coastal aquaculture and resource management. At

the end of the course, participants should be able to learn the basic concepts and principles of sustainable aquaculture in the field of breeding and seed production, nursery, fish health, feed development, farming systems and water quality management; understand the important socioeconomic, institutional and environmental issues affecting sustainable aquaculture development and resource management. Practical activities include resource and ecological assessment, participatory rural appraisal, formulation of project proposals on coastal resource management, collection and preparation of planting materials, production of natural food, cage construction and maintenance, and post-harvest handling and processing.

Venue: Tigbauan Main Station

Other Training Programs Specialised Training Courses

Upon request and arrangement in terms of schedule, coverage, and cost, the following specialised training courses could be offered for individuals or groups:

- Culture of Natural Food Organisms (NATURALFOOD)
- Seaweed Culture (SEAWEED)
- Milkfish Farming (MILKFISH)
- Mudcrab Hatchery (MUDCRABHATCH)
- Grouper and Other Marine Fish Cage Culture (MARFISHCAGE)
- Mangrove-friendly Aquaculture (MANGROVE-FRIENDLY)
- Shrimp Farming (SHRIMPFARM)
- Catfish Culture (CATFISH)
- Tilapia Culture (TILAPIA)
- Oyster and Mussel Farming (MOLLUSC)
- Sustainable Aquaculture and Coastal Resource Management (SACRM)

Internship/Practicum Training

Internships may be arranged for individuals and small groups in areas of nutrition and feed formulation, chemical and proximate analysis, plankton culture, instrumentation, and other laboratory work. AQD also accepts a number of undergraduate fisheries students for practical work (maximum of 400hrs) as a requirement for graduation. Applicants will be screened on the basis of application forms and endorsement by the college dean. Acceptance will also depend on the availability of a research laboratory in any of the Department's stations to accommodate the practicum trainee(s).

On-site training

On-site training modules or seminars may be requested by local fish farmers associations/cooperatives, fisheries schools, local government offices, non-government organisations and other interested parties depending on the availability of resource persons.

Qualification of Participants for Regular Short-term training Course

Enrollment is limited to 16-22 trainees per course. A prospective participant should have:

- College degree, preferably in fisheries, biology and related fields, or a Certificate/Diploma in Fisheries, or a high school degree plus three years of experience in aquaculture;
- Age between 21-45 years
- Proficiency in English, and
- Good health (pregnant women are discouraged due to heavy practical work)

Admission

Inquiries and request for application forms maybe sent to:

The Head

Training and Information Division

SEAFDEC Aquaculture Department

Tigbauan, 5021 Iloilo

Philippines

Telefax:(033)3362891

E-mail: training@aqd.seafdec.org.ph

A completed application form accompanied by a medical certificate of good health should be sent to AQD at least one month before the start of a given course. After screening, the applicant is notified by letter, telex, fax or e-mail of admission to the course. Admission is non-transferable. If an applicant does not confirm two weeks before the training starts, admission is given to the next applicant on the wait-list. A course session may be cancelled due to insufficient qualified applicants.

Training Fees

The basic training fee covers lodging, cot of registration, training materials, field trips, honoraria for resource persons, accident insurance, and medical consultation. Other fees include a refundable breakage fee of US$12 (for training courses with laboratory practicum) and US$50 for a one-day cultural tour in Manila (optional). Fees must be paid before the start of the training course. Payment should be made in the form of demand draft, manager's check, or telegraphic transfer payable to SEAFDEC Aquaculture Department, or in cash. A number of fellowship grants are available to applicants from SEAFDEC Member Countries nominated by their governments through their respective SEAFDEC Council Director.

General Information

Passport/Visa. A valid passport and visa are required of foreign nationals for entry to the Philippines. Participants must secure a 9(E-2) FGO or 47(A) 2 visa before commencement of travel to avoid difficulty with Philippine immigration; visa processing takes more than one month. Visas must be valid for the duration of the training course. Participants are responsible for an extension.

Transportation and communications

Iloilo is located in Panay Island, a one hour by air from Manila and 30 minutes from Cebu City. There are many daily flights by Philippines Airlines, Cebu Pacific Airlines and Air Philippines from Manila to Iloilo and two daily flights from Cebu to Iloilo. Tigbauan Main Station is located 25km southeast of Iloilo City. Telex, fax, e-mail and long distance telephone facilities are available in Manila and Iloilo.

Arrival in Manila and Iloilo

Participants coming from other countries should arrive in Manila one to two days before the start of the training course to allow travel time to Iloilo. Taxis are readily available from NAIA at US$6-7 to the domestic airport and US$5-6 (by pre-arranged rate) from the Iloilo Airport to Tigbauan Main Station.

Participants with connecting flights to Iloilo on the same day are advised to take the Philippine Airlines' (PAL) Transfer Service in going to the domestic airport. Participants whose flights to Iloilo will be on the following day are advised to look for the SEAFDEC representative at the Arrival Section Area. The representative will book the participants in a hotel and take them to the Domestic Airport for their scheduled flight to Iloilo City the next day.

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