



AQD Matters

In-house newsletter of the SEAFDEC Aquaculture Department, Tigbauan, Iloilo

Installation of the AQD Chief Dr. JD Toledo

On July 7, 2006, a brief and simple installation ceremony was presided over by Undersecretary Salvador Salacup of the Department of Agriculture.

Usec Salacup started with recognizing Dr. Joebert Toledo's 24-years of "committed and dedicated

service to SEAFDEC/AQD" and his "invaluable contribution to the pursuit of responsible aquaculture in the Philippines and the rest of Southeast Asia." Usec Salacup noted Dr. Toledo's numerous published research papers, awards, and efforts towards extending technologies to the private

sector, which, he said, "undeniably speak of a person who adheres to excellence, scholarship, and concern for the industry and the environment. His unselfish sharing of his work is a manifestation of his sense of service and love of his profession."

"With great expectation," Usec Salacup continued, "the SEAFDEC Council and the rest of the SEAFDEC community in Brunei Darussalam, Cambodia, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and the Socialist Republic of Vietnam all look forward to Dr. Toledo's leadership as the Chief of SEAFDEC/AQD."

As representative of the Department of Agriculture in the Philippines, the host country of SEAFDEC/AQD, the Undersecretary then vested Dr. Joebert Toledo all the prerogatives and responsibilities of the Chief of SEAFDEC Aquaculture Department. "In recognition of your high office and great responsibility," Usec Salacup concluded, "I present you this mace, the seal of SEAFDEC, symbol of authority of your office, and symbol of honor and great scientific tradition of SEAFDEC." Usec Salacup was assisted by AQD Deputy Chief Dr. Koichi Okuzawa.

Fisheries and aquatic biotech discussed

Discovery is not the difficulty," says Dr. Evelyn Grace de Jesus-Ayson as she summed up the 2-day national symposium on fisheries and aquatic biotechnology. The symposium was held at TMS from 5 to 6 July and was jointly organized by SEAFDEC/AQD and UPV's National Institute of Molecular Biology and Biotechnology.

The symposium aims to contribute to the Philippine *Roadmap for Agriculture and Fisheries Biotechnology Program* (2006-2016) and to the *National Research and Development Agenda for Fisheries and Aquatic Biotechnology*, specifically, by identifying research gaps, developing strategies to address common concerns, and enhancing collaboration

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Dr. Joebert Toledo, accepting the SEAFDEC mace, makes his pledge to pursue AQD's mandates on research, training and info dissemination. To his right is Usec Salacup with Dr. Okuzawa behind him. Partly hidden are Dr. Toledo's father and son. For the full text of his speech, see our website www.seafdec.org.ph



SEAFDEC/AQD unites for a quest: responsible and sustainable aquaculture development

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THE PAST A/QD CHIEFS SPEAK: Dr. Efren Ed. Flores remembers contented employees who enjoyed government-granted benefits and much more. Dr. Flor Lacanilao notes that "money is not the cause of performance but that performance alone can get A/QD much-needed funds." He believes there is no substitute for science and technology and that the country without science can not be saved. Dr. Rogelio Juliano recalls the budget problem in his time and that, from his vantage point now, "everybody looks new and everybody is young." Dr. Alfredo Santiago reminisces about A/QD's "'bloody' and colorful" past and recalls a shooting incident at the old Leganes Brackishwater Station

INSTALLATION FROM PAGE 1

The new A/QD Chief, Dr. Joebert Toledo, accepted the mace and took his pledge. "I accept this mace and pledge to devote myself to the pursuit of the three mandates of SEAFDEC/A/QD – research, training, and information dissemination - entrusted to me as the Chief of SEAFDEC/A/QD. I likewise pledge to have SEAFDEC/A/QD pursue

responsible aquaculture for the betterment of the aquaculture industry in the Philippines and the rest of Southeast Asia, the environment, and future generations. So help me God."

Witnessing the installation ceremony were the Honorable Congresswoman Janette Garin of the First District of Iloilo, the Honorable Congressman

Exequiel Javier of Antique, previous Chiefs of A/QD (Dr. Efren Ed. Flores, Dr. Flor Lacanilao, Dr. Rogelio Juliano, and Dr. Alfredo Santiago), various representatives from the private sector and the academe including UPV Chancellor Dr. Glenn Aguilar, the Toledo family and friends, and the SEAFDEC/A/QD employees.

A/QD determines transferable technologies

AQD held a 1-day workshop on June 27 to determine technologies developed from its Research Division that could already be verified in pilot- or commercial-scale with the private sector. Attended by program leaders and senior staff, this joint RD-TVCD-TID workshop produced a matrix of candidate technologies and plans for technology dissemination (thru farm demonstration, training, or manual-writing).

Most of the transferable technologies are in the area of marine fish hatchery, especially that of milkfish, rabbitfish, grouper, snapper, and seabass. A/QD has developed artificial larval and weaning diets for these fishes, and there are plans to demonstrate the good performance of these diets in

A/QD production hatcheries and in interested private hatcheries. After which, A/QD will write a multi-species hatchery manual for Southeast Asian fish hatchery operators.

A/QD is also ready to disseminate its mudcrab hatchery technology. Refinements in the protocol will be incorporated in the revision of the mudcrab hatchery manual, and in the current training syllabus.

For shrimp, the most welcome development is the use of indigenous probiotics that will combat luminous bacteria. For the giant freshwater prawn, a lake-based nursery

As a result of the June 27 workshop and division meetings, TVCD will implement, starting August, eight verification studies on the culture of white shrimp, mudcrab, grouper, seabass and milkfish using A/QD-formulated diets. Another eight production studies will be done at TMS, DBS and IMSS

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Brunei training on shrimp health

It went without a hitch,” reports Training Section Head Kaylin Corre, describing the conduct of the 4th training in a series of activities under the *ASEAN Human Resources Development Project for Sustainable Fisheries in BIMP-EAGA*. The thrust of the training-workshop was enhancing the capability of government officers to advise shrimp farmers on good aquaculture practices to decrease disease risks and increase profits.

The training was held May 22-25 at the Riverview Hotel, Bandar Seri Begawan, Brunei Darussalam. There were 22 participants, 18 officers of Brunei’s Department of Fisheries (DOF) and 4 farm operators. The number is 12 more than planned for, and, at the request of the DOF Director, the per diem of the original 10 were spent instead on tea break for all.

The AQD contingent were composed of (1) Dr. Celia Pitogo who lectured on the selection of good quality shrimp fry, impact of disease development, and detecting disease signs at the farm level; (2) Dr. Fe Estepa who discussed penaeid biology and fry identification; (3) Dr. Leobert de la Pena who talked about containing shrimp disease outbreaks, pond site selection and construction, pond preparation, and soil/water management; and (4) Ms. Kaylin Corre who coordinated the training with the help of DOF’s Acting Deputy Director Abdul Halidi Mohd Salleh (also the SEAFDEC National Coordinator for Brunei) and Fisheries Officer/Fish Health Lab Head Dyg Wanidawati binti Awg Tamat.

After the technical lectures, three of the participants presented case studies of shrimp farms, their

operations, cultured species, problems encountered and others.

There was also a field trip to two farms and to the government water pumping station supplying seawater to 6 farms that cover 92 ha. The first farm visited was an 18-ha farm culturing *Penaeus stylirostris* and *P. monodon*. The second had 27 units of 3,000 m² compartments also with the same shrimp stock. The AQD researchers demonstrated in situ the method for detecting signs of disease and how to tell the two species apart. The participants took notes of the diseases they observed and later used the list in the workshop determining needs and requirements for farm level disease diagnosis.

Lastly, Dr. Pitogo briefed the participants on the code of practice for sustainable shrimp farming.

CvSU-Naic study tour of Malaysia, Indonesia, Singapore

part 1

AQD coordinated the 5-day, 3-country study tour of the Cavite State University (CvSU) – Naic faculty as part of the mutual agreement to train the CvSU faculty on fisheries R&D. On May 30, the first stop for Superintendent Dr. Hernando Robles, instructors Weeny Tandang-

Escobar and Jocelyn Robles, and AQD Training Specialist Ruby Bombeo was BARC, the Brackishwater Aquaculture Research Center in Johor Bahru, Malaysia.

BARC has a very similar mandate with AQD. It is headed by Kathamuthu Subramaniam, a NACA-SEAFDEC alumnus. Its

research officer, Fadzilah binti Yosuf, was a participant of the *UNESCO-MAB SeaBrNet*

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BARC facilities: Raceways for growing seabass and grouper (left); biomass culture of Artemia in raceways [RUBY BOMBEO PHOTOS]



Partnerships with Antique and Capiz

To bring its technologies to poor villages and towns with troubled aquatic resource management, AQD has conceived of a 3-year project on *Institutional capacity development for sustainable aquaculture and stock enhancement* (ICD-SASE). The goal is to empower stakeholders to become efficient resource managers and prudent resource users through

enhancement of their knowledge and skills in aquaculture and coastal resources management.

The first to sign on the project was the Congressman of Antique. The honorable lawmaker Exequiel Javier immediately allocated P500,000 for projects in his district, and signed an agreement with the AQD Chief on June 29 in San Jose, Antique. AQD is tasked to consult and plan with individual towns the projects

appropriate to their respective areas.

Under the guidance of TID head Renato Agbayani, a multi-disciplinary team has gone to Antique twice, the first on June 29-30 to meet with key informants, the second on July 18-19 to consult with the big three groups of LGUs. These groups are LIPASECU which covers the northern end of the province; CAM-CRAME, the

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Bacolod shrimp congress: Mercedes Maceren and Dr. Emilia Qunitio (above) volunteered to man the AQD booth with Dr. Fe Estepa and Lillian Gustilo. They sold a record P80,300 and US\$200 worth of AQD books [FD ESTEPA PHOTO]



Cabuyao trade fair: Local mayor Nila Aguillo (in green) poses with her staff and with AQD researchers [BFS PHOTO]

Cabuyao and Bacolod: AQD shows off its products

On May 23-25, AQD made its presence felt in the countryside by providing free technical advice to practicing fish farmers and neophyte aquaculturists attending an agri-trade fair in Laguna. The fair was organized by the Cabuyao LGU. The exhibitors along with AQD were Schering Plough, UPLB Biotech, and PhilRice.

As AQD scientist Dr. Ma. Rowena Eguia noted, the fair was a chance to advertise and promote AQD's R&D, training, and other activities. The invitation came because some Cabuyao farmer-residents had come to know of AQD through their attendance to the training course on freshwater aquaculture.

June 21-23 had AQD exhibiting its R&D programs at the 5th National Prawn Congress organized by the Philippine Shrimp Industry Inc. in Bacolod City. The congress may have seen its most number of participants, more than 600 from industry, academe and research sectors.

AQD Chief Dr. Joebert Toledo, who was invited to deliver a message, explained AQD's current programs on shrimp (the focus is still on tiger+white shrimps and on testing indigenous probiotics). Dr. Toledo also invited the shrimp industry to avail themselves of services offered by AQD, most notably that of the test for residues of

antibiotics and pesticides. Not a few shrimp farmers had thought that this test is not available in the country.

Most of the congress discussions were on the exotic Pacific white shrimp *Penaeus vannamei*, and covered the advances in hatchery and culture and the results of the breeding and culture tests in the Philippines. Many of the participants were apparently very pleased to hear that BFAR is recommending the lifting of its import ban. It was, however, made clear that the white shrimp should be taken from accredited specific-pathogen-free facilities.

The congress also took up the regulations on importation recently adopted by the European Union and Japan.

Sec-Gen Dr. Siri comes to Tigbauan

On June 9, Dr. Siri Ekmaharaj made his second visit to AQD as Secretary-General. In a general assembly of AQD employees, Dr. Siri warmly welcomed the new AQD Chief, Dr. Joebert D. Toledo, to the SEAFDEC family and said that AQD employees should be proud of their Chief as he is a recognized expert in



aquaculture in Southeast Asia. Dr. Siri also noted that SEAFDEC needs more support from national organizations though host countries have already given their full support (people and facilities) to the departments in their care. He wished a good future for AQD and its employees.

Dr. Toledo, on the other hand, spoke briefly about AQD's plans on regional networking and joining research consortiums. He noted that Dr. Siri is not a stranger to AQD, having attended aquaculture meetings as the Thai government's representative, and lauded his work on

mangrove-friendly aquaculture.

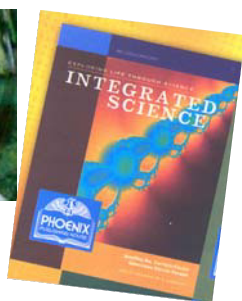
Both gentlemen are old schoolmates at Hiroshima University in the early 2000s when Dr. Siri was completing his Doctorate in Aquatic Ecosystems Management and Dr. Toledo his Doctorate in Agriculture.

Later in the day, Dr. Siri had a meeting with AQD division heads who presented summaries of research, technology verification, training and information dissemination activities.

The Sec-Gen was accompanied by Mr. Somnuk Pornpatimakorn, the Secretariat's administration and finance coordinator.



Scientist in a book



AQD scientist Dr. Ma. Lourdes Cuvin-Aralar appeared in a new science textbook series written for Filipino high school students. Dr. Aralar is featured as an aquaculturist in Chapter 16 *Water for a Thirsty World* of the Integrated Science (Year I) volume of the series. The book also featured how scientists work as a team (the way they do at SEAFDEC). The textbook and accompanying laboratory manual are published by Phoenix in the Philippines.

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among the different R&D units from government agencies, universities, research institutions and industry.

There are several groups from state universities and government or regional research units working on several areas of fisheries and aquatic biotech in the Philippines. AQD, however, is at present mainly focused on four areas: molecular microbiology (rapid disease detection and diagnosis), molecular endocrinology and genetics (growth enhancement and genetic characterization of wild stocks of freshwater prawns), algal production (strain improvement in seaweeds and high density production of algae used as food for fish, crustacean and mollusk larvae), and fish feed technology (nutrient enhancement and development of low-polluting diets).

"The difficulty of biotechnology research and development in the Philippines is in bringing laboratory results to pilot- or commercial-scale as this requires investors with a lot of money and foresight," Dr.

Ayson, RD Head, continues. "Then there's the problem of marketing 'biotech' products especially with the strong lobby of those groups against genetic modification of any kind." But whatever future aquatic biotech will hold for the Philippines, the experts present in the symposium all agree that it is much better to continue working to fulfill the biotech potential and be ready when the biotech industry would eventually start taking off in the country.

The controversial genetic modification is still a long way for fisheries and aquatic biotechnology. Efforts in stock management and conservation are currently focused on the development of breeding and culture techniques for target species for stock enhancement like the giant clam, sea urchin, sea cucumber, top shell, abalone, capiz shell, seahorse, and angel wings, as well as genetic characterization of wild and hatchery-bred stocks and

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Marfish training at TMS

The international training on marine fish hatchery was attended by 8 participants from Australia, Cambodia, Vietnam, Federated States of Micronesia, Indonesia, and the Philippines. Four of them were funded by the Government of Japan (GOJ) while the rest went by private funds. The Australian participant, Kenneth Gabriel Chow, opted to extend his stay at AQD under the internship program.

Ms. Myleen Magistrado, the class chair, thanked the AQD lecturers, practical

instructors, and training staff for what she calls “excellent lectures, perfect practicals, comfortable stay.” She said she and her classmates were impressed with the patience and quality time spent by those involved in the course.

The AQD Chief and Deputy Chief distributed the training certificates, enjoining each trainee to share and apply their newly gained knowledge in promoting their respective countries’ aquaculture industry.

Dr. Joebert Toledo noted that seed production is one of the basic aspects of fish

culture in the same way that rice needs seed to sow. He urged the trainees to show their social responsibility by following the code of conduct for responsible aquaculture and fisheries. Dr. Koichi Okuzawa, on the other hand, was happy to note the attendance of 4 additional trainees from Vietnam and of another trainee working in the Middle East who was in a past session. AQD has welcomed more and more countries to its doors.

Marine fish hatchery is a 45-day course. This year’s batch trained May 3 - June 15.



Training at AQD has never been easy, what with 80% practicals (at left, the marfish trainees did induced breeding and net installation exercises) and only 20% lecture. Getting a certificate of training is a happy occasion



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central part; and COASTHAVEN, the southern end.

The second 2-day consultation was attended by about 70 fisherfolk, government technicians, SBs, and mayors. AQD presented its experiences in Malalison (by RF Agbayani) and how the lessons learned there were used by Pandan Bay's four towns to organize themselves (D Baticados). AQD also talked about its transferable technologies (Dr. NS Chavoso), stock enhancement

(A Fermin), training (K Corre) and information (M Castanos) programs. Dr. E Amar discussed biophysical impact assessment while D Baticados the socioeconomic impacts of project intervention. The LGU groups on the other hand introduced their organizations and discussed their problems. Lack of technical know-how (aquaculture for alternative livelihood) heads the list.

As a result, AQD will first put up a demo seabass culture in Hamtic and training 11 pond workers at the same time. This will be done August 2-4.

In addition, the Chief, Deputy Chief, RD and TID Heads signed a separate agreement with LIPASECU for the stock enhancement of giant clam and abalone in Malalison. This was July 12.

Meanwhile, Governor Vicente Bermejo of Capiz has asked AQD to prepare a similar MOA as Antique. The AQD team visited the governor, the provincial agriculturist and other key informants in Capiz on July 13.

AQD's 33rd year celebration at TMS

The celebration week ~ July 3 to 7 ~ started with treeplanting on Monday, a modest medical mission for the neighboring community on Tuesday, a 2-day national biotech symposium Wednesday and Thursday, and anniversary mass (officiated by Rev. Fr.

Sinforos Padilla Jr) and main programme on Friday.

Friday saw the blessing of the refurbished TID lecture-conference rooms; the AQD Chief formally installed in his post by Philippine government representative Usec Salvador Salacup; the book *Seaweeds of Panay* launched; Dr. JH Primavera and Dr. FP Pascual

honored by AQD for their contribution to science and industry; and Dean Domiciano K. Villaluz Memorial Lecture held in the afternoon.

The week-long celebration ended with parlor games (employees played bingo four times, a mudcrab message relay, and an improvised "pinaka" game) and a get-together dinner party.

Kudos to the anniversary committee chaired by Ms. Kaylin Corre for the fun and meaningful celeb.



Ten mango and 100 langka trees were planted near the elevated freshwater tank at TMS. The employees were joined by a UPV economics class, and both groups joyfully sang thrice Joyce Kilmer's tree poem during the snack break. The poem goes "I think that I shall never see, a poem lovely as a tree... A tree that looks at God all day, and lifts her leafy arms to pray..."

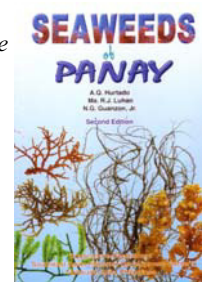


A total of 57 residents (38 children+ 19 adults) of Buyu-an, the barangay where TMS belongs, were served by the medical mini-mission. The residents were examined by two doctors (Dr. Lygeia Gilongos and Dr. Sylvia Gepes), a midwife (Ninfa Torreto), and brgy. health workers (Carmelina Maglocot and Delilah Taton). They were accompanied by brgy. kapitan Mor Miranda. AQD gave away mostly vitamins, headache med, and cough syrup as the children had colds, were febrile, and exhibited loss of appetite

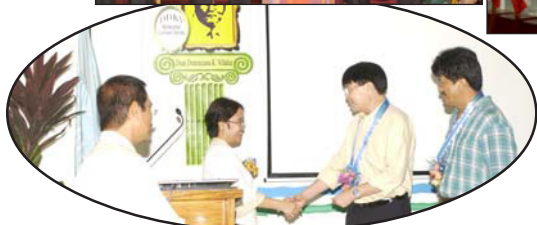


Authors Dr. Anician Hurtado, Ma. Rovilla Luhan and Dr. Nicolas Guanzon Jr. handed over the first 30 copies to industry and academe guests. The 50-page second edition *Seaweeds of Panay* lists 112 species of seaweeds, 27 of which are new records to Panay.

Two other 2-page flyers were introduced to the audience: (1) Living with suso in bangus ponds and (2) Cage culture of the giant freshwater prawn *Macrobrachium rosenbergii* in lakes



Honored with plaques of recognition for exemplary achievement were Dr. Jurgenne Honculada Primavera (in the fields penaeid shrimp aquaculture, environment-friendly aquaculture and mangrove ecology) and Dr. Felicitas Pascual (in the field of shrimp and fish nutrition)



This year's Dean Domiciano K. Villaluz Memorial Lecture was given by Dr. Aklani Rose Hidalgo, Director of UPV's Institute of Fish Processing Technology. She spoke on "Processing and market potentials of aquaculture products". Above, the Villaluz sons Tony and Nitoy gave Dr. Hidalgo a token of appreciation

Happy 33rd!

Food should not only taste good, it should be safe



It is rather scary to hear of the hazards in eating cultured fish. Dr. Aklani Rose Hidalgo of UPV, this year's DKV lecturer, lists them as: food-borne trematode infections, bacterial diseases, viruses; residues of agro-chemicals like the banned Brestan, veterinary drugs and heavy metals. Hence, the successful marketing of aquaculture products globally now hinges on food quality and safety. This food safety should start from the (farm) gate to the (dinner) plate, and compliant with HACCP or the Hazard Analysis Critical Control Point to name one.

To increase marine product exports and maintain the viability of the aquaculture industry, Dr. Hidalgo suggests selling innovative (unique, desirable) foods to niche markets like the halal, kosher, organic, and quality ethnic food markets.

Fish by itself is already considered halal or permitted under Sharia law without the prayer ritual for slaughtering animals by an Imam. The global halal trade is estimated at US\$150 billion with the major markets found in Southeast Asia (Indonesia is the most populous Muslim country), India and China. The supply of halal products worldwide is considered low.

Kosher means proper, in conformity and clean, with the dairy, meat, and cereal ingredients separated in a product. Kosher-certified consumers include Jews, lactose-intolerant persons, vegetarians, and Muslims.

Organically-farmed products must be produced and certified as such, the organic process beginning in pond preparation to feeding until processing.

The traditional or ethnic products are produced employing basic ingredients using simple, traditional methods and unsophisticated equipment. Southeast Asian countries are known for fermented fish (patis, bagoong, burong isda or rice-fish ferment), salted fish (binuro), dried fish (daing), and smoked fish (tinapa).

In addition to HACCP, food producers must have Good Manufacturing Practices (GMP), Sanitation Standard Operating Procedures (SSOP), food standards (microbial, chemical, sensorial), and traceability of all the raw materials used.

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Dr. Flor Lacanilao, retired UP Diliman Professor of Marine Science and ex-AQD Chief and ex-UPV Chancellor: *Public understanding of science* [July 28]

Dr. Ralph Turingan, Associate Professor at the Florida Institute of Technology: *Experimental design and statistical analysis* [July 10 to November, every Monday, 4-6 PM]

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development of molecular markers. The University of the Philippines' Marine Science Institute and SEAFDEC/AQD are active in this front.

In health management of shrimp and fish, AQD researchers continue to develop techniques for rapid disease diagnosis especially for viruses using biotech tools, explore the use of indigenous probiotics and immunostimulants, and develop vaccines. These are practical tools to help fish farmers save their crops. Of course, the occurrence of diseases in fish farms may be prevented by good husbandry practices, but this may not always be the case. Disease agents are, after all, ubiquitous in the environment, and the rapid transport of people and products adds to the risk.

Perhaps closer to most people's imagination of GMOs (genetically modified organisms) may be the R&D on controlled breeding. But like stock management, breeding programs are as yet focused on broodstock management including broodstock nutrition, development of molecular markers and molecular

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CvSU-NAIC PAGE 3

Course on Responsible Aquaculture last April 2005. Yosuf also heads the Genetic and Molecular Biology Laboratory while Azmi bin Rani, also a research officer and participant of the *Mangrove Friendly Shrimp Aquaculture* in October-November 2004 heads the Fish/Shrimp Health Unit.

BARC has a total area of 252 hectares and is one of the branches of the Fisheries Research Institute (FRI) under the Department of Fisheries Malaysia. It has operated since 1978, and has a tidal pond system and modern pond facilities. Personnel

complement is about 90, and distributed into the fish/shrimp unit, feed and nutrition unit, fish/shrimp health unit, biotechnology unit, genetics and molecular biology unit, and extension services. Each of the 6 units covers research to technology transfer.

The achievements of BARC include development of an intensive culture system for tiger shrimp, a nursery system for seabass fingerlings, patented tiger shrimp feed formulation, which was adopted by a local feed miller, development of feed formulation for banana shrimp and seabass, design for a feed spraying machine to ease workload, design for a

prawn grader to handle large volume of shrimp, increase in shrimp production from 2 to 6 tons/ha/cycle in 110 days, increase in the survival rate of seabass fingerlings from 20% to 70% using the raceway system, development of culture technology for several new species of marine fish, development of a round pond with plastic lining and central drainage system to increase shrimp production and successful incorporation of soybean meal to partially replace fishmeal.

**Next stop, next issue:
Batam Island, Indonesia**

(and grow-out) system is being disseminated to the private sector.

AQD is also ready to embark on the transfer of abalone hatchery technology. A manual for abalone hatchery operations will be written while the training courses continue. Nursery and grow-out techniques for abalone will be refined for later pilot-testing in private farms. Hatchery-reared abalone seedstock are planned to be dispersed in marine protected

areas under Agreements with Philippine local government units, and will be initially implemented in the province of Antique.

In the case of grow-out culture, the transferable technologies include an integrated culture system for shrimp involving oyster, tilapia and seaweeds to clean up shrimp effluent. Similarly, the bacteria and algae derived from the green water culture system will be tested as probiotics in shrimp ponds.

This is after laboratory studies

have proven that these bacteria and algae have metabolites with inhibitory effects on the luminous bacteria. Polyculture with tilapia, rabbitfish, seabass, snapper, milkfish, or grouper will also be verified since a study has shown that mucus from the skins of these fishes is bactericidal.

AQD-developed artificial diets for grow-out culture of grouper, white shrimp, mudcrab and milkfish will be verified and extended.



tagging. Conventional breeding and seed production techniques have been used for fishes (milkfish, grouper, snapper, seabass, rabbitfish, tilapia, catfish, bighead carp), crustaceans (shrimp, crabs), and mollusks (abalone, trochus shell, capiz shell).

Most, if not all, of these species have their life cycles completed or closed in captivity. Most of the work has been done by AQD. Selective breeding for improved traits (e.g. fast growth and salinity tolerance) has been done mostly on tilapia. BFAR's National Fisheries Research and Development Institute has already some success in breeding a fast-growing saline tilapia they call molobicus. This new strain is a cross between *Oreochromis mossambicus* and *O. niloticus*.

The strain improvement of seaweeds is an industry necessity. The stocks have

been deteriorating in quality because most of the farmed seedstocks in the country are branch offs from early 1970s stocks. Seaweed farmers are faced with "ice-ice" or whitening of seaweeds by what may be agar-digesting bacteria. Seaweeds may also be of use in bioremediation as they can absorb organic, heavy metal, and other pollutants. To safeguard original seaweed strains and preserve biodiversity, UP-MSI has started a seaweed seedbank. AQD likewise plans to put up a seaweed seed bank initially for species endemic in Panay but will collaborate with UP-MSI, other research institutions and other seaweed industry stakeholders to establish a repository of all Philippine seaweeds.

AQD has interest in developing less polluting feeds, too. The tool is

necessarily biotech because the alternative to animal feed sources is only plant sources, and nutrients from plants are not readily available unless these undergo further processing (like adding enzymes).

R&D initiatives of universities including UP's National Institutes of Biotechnology and Molecular Biology, the Marine Science Institute, and others, focus on microbial enzyme production; isolation and characterization of bioactive compounds from algae, sponges, coelenterates, tunicates and microbes; isolation and characterization of marine toxins and production of antibodies for drug development, etc. Some results, like microbial enzyme production systems developed at UPLB-Biotech, are ready for commercialization.

The biotech symposium was attended by about 100 participants from research, academe and government. It was sponsored by DA, BFAR-NFRDI, PCASTRD and PCAMRD of DOST, Intellectual Property Philippines, Tateh Aquafeeds, Oversea, Cargill Purina, Feedmix, and Gent Aquaculture Technologies.

AQD community-shared experiences

Logging in using the new biometrics

AUGUST is the official start of the biometric system of recording attendance by having the computer recognize the employee identification card code and then impressing one's thumb print on the pad. Employees at TMS have been practicing since July 17. AQD stations without the system will be using the bandyclock.

Filling up the job analysis form

KPMG, the external auditor of SEAFDEC, has been tasked to conduct a human resource study beginning July. The package includes a capacity building seminar, staffing, performance monitor / rewards by point system, and a manual of operations as a last output. The new policies on human resource management could take effect in 2007. For starters, KPMG has distributed a job analysis / position questionnaire to be filled up by all.

Updating ourselves

JOURNAL CLUB and the RD research seminar series are good venues to hear about as-yet unpublished research or just about anything. They are lively and interesting. Held at the RD AV-Room, both are open to all. This June through July, we have heard from:

Dr. Michael Rice, Professor of Fisheries and Aquaculture of the University of Rhode Island: *Reproductive suppression in the quahog clam in high density protected fishery areas in Rhode Island* [June 8]

Dr. Felix Ayson, AQD scientist, *How to present an oral paper during scientific meetings* [June 22]

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U P D C O M M U N I C A T I O N

August-December

2-4 August

On-site training on seabass culture for fisherfolk, Hamtic, Antique

3 August

RD seminar at TMS: *Enhancing disease monitoring in shrimp through GIS* by Dr. CL Pitogo

4 August

Journal Club seminar at TMS: *A crowded house- the plight of the European seabass on stress responses and bioenergetics* by RE Mamauag

Stock enhancement by Ronald Maliao

Mid-August

Browse our newly reconstructed website

www.seafdec.org.ph

15-29 August

Special training course on abalone hatchery seed production and culture, TMS

21-24 August

AQD exhibit to ICEMAN (International Conference-Exhibition on Mangroves of Indian and Western Pacific Oceans)
c/o Dr. JH Primavera
Legend Hotel, Kuala Lumpur

12-15 September

Training on farm-based feed preparation for freshwater aquaculture
Indonesia [AQD+BIMP-EAGA]

30 days in September-October

Training course on crab seed production

4 September - 12 February

E-Learning: AquaHealth

5-7 October

AQD exhibit at the AgriLink / FoodLink / AquaLink, World Trade Center, Manila

9-29 November

Special training course on abalone hatchery seed production and culture, TMS

An invitation

AQD Matters is the newsletter of **all employees**.

We would thus love to hear from you, in your **OWN words** ... the only limitation being the space, so please

limit write-ups to a **single page** and that would include 1-2 pictures already. Together, let us cover more of

the **social aspects** of the AQD community and get to know each other **more**. **SEAFDEC/AQD unites**

for a quest: sustainable and **responsible** aquaculture **development**

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