A tiger-tail seahorse is presented at its fully stretched height for a training demonstration. *See feature story on page 6.* [PHOTO BY IT TENDENCIA]

aqdmatters

September-October 2020 Newsletter of the SEAFDEC Aquaculture Department, Tigbauan, Iloilo, Philippines

Matters inside

It's online learning for PH aquaculture extension workers

A step-by-step demonstration on how fish farmers can prepare their own feeds is captured on video to create content for an online training for aquaculture extension workers. *Photo by EV Antolino*

LEARNING ONLINE isn't just for students, it is also for the country's aquaculture extension workers who listened to lectures and practical sessions on milkfish and mangrove crab culture via an online platform.

Forty-eight participants, mostly staff of the Bureau of Fisheries and Aquatic Resources (BFAR) from the different administrative regions, recently completed the FishKwela Training Course to enhance their skills on the hatchery production of milkfish and mangrove crab.

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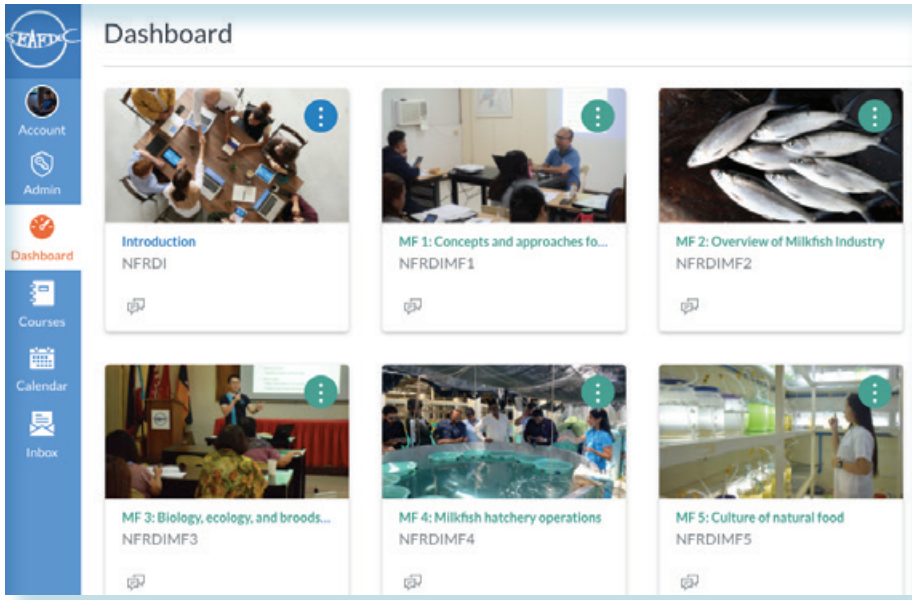
The training course was the first technology and commodity-based online training course prepared by SEAFDEC/AQD in collaboration with the National Fisheries Research and Development Institute (NFRDI).

Although SEAFDEC/AQD has been conducting online courses on fish health management and aquaculture nutrition since 2002, Caryl Vincent Genzola, officer-in-charge of its Training Section, said the recent FishKwela training course "was designed to provide an in-depth, step-by-step look" on milkfish and mangrove crab culture.

The FishKwela online training course held its first session last 31 August 2020 to 04 September 2020 and its second session from 14 September 2020 to 17 September 2020.

With the training hosted on Canvas e-learning platform, participants were given user accounts to access the content dashboard which hosts videos of lectures and practical demonstrations, specially created for the course.

The trainees were given guided video tours of SEAFDEC/AQD's integrated milkfish and broodstock hatchery complex, mangrove crab hatchery, and feed mill. Online discussion boards also allowed trainees to consult with technical experts, while online examinations measured the participants' understanding of concepts.



Screenshot of the online modules completed by participants of the FishKwela Online Training Course on Milkfish and Mangrove Crab Technologies who were mostly aquaculture extension workers from different regions of the Bureau of Fisheries and Aquatic Resources.

"The training was very good and informative. I also appreciate that it was recorded so I can repeat parts that I didn't understand," stated Norhata Dumasil, a participant from the Ministry of Agriculture, Fisheries, and Agrarian Reform, Bangsamoro Autonomous Region in Muslim Mindanao.

"The extended time and days of the training were very convenient to us because we were able to view the video lecture presentations in our free time," remarked Riza Pulac, a participant from Bureau of Fisheries and Aquatic Resources, Cordillera Administrative Region.

More online training courses to come

Genzola assured that FishKwela is just a preview of other online aquaculture training courses they intend to develop, in collaboration with BFAR and NFRDI.

Plans are also in place to convert other in-person training courses to online courses that will cater to both Filipino and international participants.

For the past 46 years, SEAFDEC/AQD's stations in the provinces of Iloilo, Guimaras, and Rizal have hosted over 12,000 trainees from all over the world who took part in hands-on training courses organized to promote human resource development in aquaculture.

"Since the trainees cannot come here, we might as well bring the training to them via the internet," said Genzola.

- JR PAGADOR

Joseph Biñas, associate researcher and Feed Mill supervisor of SEAFDEC/AQD, is recorded on video to produce content for an online training for aquaculture extension workers. ***Photo by JF Aldon***

Agri-wastes eyed as cheap, eco-friendly source of fish feed

AFFORDABLE and sustainable feed ingredients for fish farmers are in the works as researchers continue to develop fish diet formulations using discarded agricultural wastes and byproducts.

Dr. Frolan Aya, a scientist at SEAFDEC/AQD, and his colleagues examined agricultural wastes and byproducts for potential inclusion in diets formulated for omnivorous fish such as Nile tilapia *(Oreochromis niloticus*) in their study, "Potential use of agricultural wastes in aquafeed production."

Fruit peels, pulps or brans, seeds, bagasse (sugarcane residue), molasses, and okara (soybean curd residue) comprise 40 to 60 percent of wastes generated from major crop industries such as coconut, banana, pineapple, mango, citrus, and sugarcane.

While these agri-wastes have found some use as organic fertilizer and feed for livestock and poultry, the sheer volume of these energy-rich throwaways leaves some incentive to use them as ingredients in fish feed.

In aquaculture, formulated feeds account for the single largest expense, responsible for upwards of 50 percent the production cost. Commercial feeds are particularly expensive because of their use of fish meals and oils which are often imported. The use of these ingredients in the diets of farmed fish is also widely regarded as an unsustainable practice.

Dr. Aya said that the use of local and readily available alternative ingredients in fish feed is necessary to make aquaculture sustainable.

Notable alternatives

Among agricultural wastes that Dr. Aya and his team analyzed, mango peel was particularly noted as a potential ingredient in fish diets because of the presence of carotenoids as well as vitamins C and E.

"Since the presence of carotenoids has an important contribution on fish reproduction, we tested this ensiled [preserved and fermented] mango peel for Nile tilapia broodstock diets at two inclusion levels—25 percent and 50 percent—to examine the effects on growth and fry production for both tank and lake-based cages for 12 months," discussed Dr. Aya.

Okara or soybean curd residues are being incorporated as an additive for fish diets. This byproduct is currently being studied as a potential substitute for fishmeal. *Photo by FA Aya*

Mango peels and seeds are discarded by a machine at a mango processing plant. Agricultural wastes such as mango peels are being considered as alternative and affordable sources of nutrients that may be included in fish feed. *Photo by FA Aya*

While fry production in both tank and cage trials was not significantly different in all treatment groups, Dr. Aya said that more fry was produced by tilapia fed with the diet that incorporated more of the ensiled mango peel.

On the other hand, okara meal, a byproduct of soymilk processing, is also currently being studied as a protein source that could potentially replace fishmeal.

"We also collect okara meal, ferment them with probiotics and yeast, and incorporate this fermented okara meal in tilapia feeds. We are further testing the effect of feeding fermented okara meal on the growth performance and feed utilization of Nile tilapia fingerlings reared in cages and tanks," remarked Dr. Aya.

Plans and prospects

As part of an ongoing 5-year study funded by the Government of Japan Trust Fund, Dr. Aya revealed that there are also plans to explore and evaluate other alternative feed ingredients in diets for giant freshwater prawn and tropical anguillid eels.

Furthermore, he also emphasized the importance of the promotion of these alternative feeds among small-scale fish farmers as well as collaboration with other government agencies and research institutions.

"Our small-scale fish farmers cannot afford to buy commercial feeds and they are constantly looking for ways to reduce their production cost. Use of alternative feed sources is therefore necessary and of great interest to the aquaculture industry," stressed Dr. Aya.

- JR PAGADOR

SEAFDEC/AQD expert presents in webinar for environmental governance

Dr. Jon Altamirano delivers his lecture on the Webinar Series on Environmental Governance held last 02 September 2020.

DR. JON ALTAMIRANO, associate scientist and head of the Farming Systems and Ecology Section of SEAFDEC/AQD, presented the organization's different aquaculture and mariculture technologies as part of the Environmental Governance Webinar Series under the Environmental Justice Sector Reform Project.

Held last 2 September 2020, the lecture series aimed to strengthen the capacities of Local Government Units (LGUs) with regards to natural resource management approaches and technologies as well as basic environmental laws.

The webinar was organized with partnerships from Tanggol Kalikasan (TK), Don Mariano Marcos Memorial State University, and the La Union Provincial Office of the Department of the Interior and Local Government.

Funding for the webinar was provided by the Bureau of International Narcotics and Law Enforcement Affairs of the US Department of State and International Technical Assistance Program of the US Department of the Interior.

- JR PAGADOR

Genetics for sustainable aquaculture highlights online conference

TO SHARE the technology generated on genetics and genomics, Scientist Dr. Maria Rowena Eguia represented AQD during the web conference series of the Asosasyon ng mga Propesyonal sa Pangisdaan ng Pilipinas (APPP) Incorporated last 21 October 2020.

Dr. Eguia shared that genetics and genomics can be a significant invention in aquaculture challenges such as poor quality seedstock and broodstock, aquatic animal diseases, and environmental degradation. Genetics and genomics studies may help identify good aquaculture stocks, improve fish breeding efficiency, growth, and survival, and enhance immune response and disease resistance of aquatic animals.

Moreover, Dr. Eguia also presented the existing genetic efforts, especially in tilapia, milkfish, and abalone production in the Philippines.

View Dr. Eguia's full presentation through this link: https://youtu.be/XOjnoJNfR48?t=1844

- JM DE LA CRUZ

Dr. Maria Rowena Eguia, a scientist at SEAFDEC/AQD, shared how genetics can help achieve sustainable fish production during the APPP web conference last 21 October 2020.

Field-testing of cost-effective aquaculture feed commences

THE FIELD TESTING of cost-effective aquaculture feed for tilapia in brackishwater ponds was launched last 4 Sept. 2020 at SEAFDEC/AQD's Dumangas Brackishwater Station. Representatives from the Bureau of Fisheries and Aquatic Resources Region 6 (BFAR 6), witnessed the stocking of fingerlings. The 4-month experiment, under the oversight of SEAFDEC/AQD Scientist Dr. Roger Edward Mamauag, is a collaborative project between SEAFDEC/AQD, the National Fisheries Research and Development Institute (NFRDI), BFAR, and the Department of Agriculture.

- RD DIANALA

Cost-effective feeds are being fed to fingerlings at Dumangas Brackishwater Station. *Photo by RE Mamauag*

Mangrove crab technologies take spotlight in online training course

THIRTY-TWO PARTICIPANTS comprised of fisherfolk association members, local government office staff, and private business owners completed the recently-concluded online course on mangrove crab technologies.

Held last 20 Oct. to 23 Oct. 2020, the training hosted participants hailing from Negros Oriental, Bohol, Cebu, and Cotabato City over the four-day course.

"We are very thankful for this training opportunity. We were able to learn about a lot of things and were guided by the proper things to do with the rearing of mangrove crab," stated Romar Ermar, a participant from La Libertad, Negros Oriental.

"Before we don't know anything about the production of mangrove crab but thanks to this training, we were able to learn about a lot of things over four days," remarked Charls Litoy Lingo, president of the Ayungon Fisherfolks Association.

Held on the online platform Plex TV, participants learned about the technicalities and basic skills of mangrove crab hatchery, nursery, and grow-out operations over the course of four days.

Participants of the Online Training Course on Mangrove Crab Hatchery, Nursery and Grow-out Operations get briefed on the course content via Zoom. *Photo by JF Aldon*

Pre-recorded lecture videos from the resource persons and in-depth videos on practicals were presented to aid the attendees' learning process.

The participants also expressed their interest in pursuing further on-site training in the Tigbauan Main Station once the pandemic is over and quarantine restrictions are lifted to augment the learnings they got from the online course.

The Training Section of SEAFDEC/AQD organized the course in collaboration with the AFOS Foundation through the Fish Visayas Project, the Isla de Pitogo Mangrove Crab Association of Pres. Carlos P. Garcia, along with the LGU offices of Pitogo in Bohol, and La Libertad, and Ayungon in Negros Oriental. a

- JR PAGADOR

FEATURE

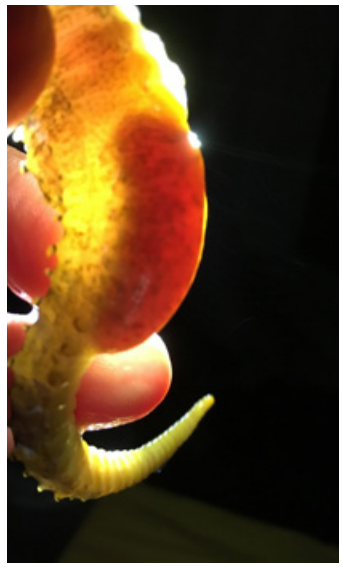
Seahorses get second life with SEAFDEC and NegOcc islanders' help

THE CORAL REEFS north of Negros Island are once more teeming with seahorses after a seven-year partnership between researchers and the local island community successfully protected and replenished their wild population.

At Molocaboc Island in Sagay City, Negros Occidental, divers assisted in scientific surveys of seahorse populations, technicians maintained seahorse breeding facilities, the local government's Bantay Dagat (sea patrol) enforced protection, and schools gladly embraced information and education campaigns.

The island is within the Sagay Marine Reserve, a marine protected area chosen as the project site of SEAFDEC/AQD to protect and revive the dwindling population of the tiger tail seahorse (*Hippocampus comes*).

During assessments done from 2012 to 2013, local divers only found an average of 4.6 seahorses after an hour's standard survey of the waters in the island. Dr. Shelah Mae Ursua, an associate scientist of SEAFDEC/AQD, also collected DNA samples for genetic analyses and found low levels of genetic variations among the seahorses that confirmed a dwindling population.



A tiger tail seahorse *(Hippocampus comes)* shown to locals during a training at Molocaboc Island in Sagay, Negros Occidental. Seahorses belong to the fish family Syngnathidae where males carry eggs from the female in a pouch to fertilize during incubation, making them appear "pregnant". *Photos by RD Dianala & SM Ursua.*

Over seven years of conservation efforts, the number of seahorses collected during surveys gradually increased to 18.7 individuals per dive in 2015, 30 between 2016 and 2018, and 34 in 2019.

"This suggests that the natural seahorse population can recover with the proper management of natural resources, particularly by minimizing human disturbances in their habitats and preventing the collection of seahorses," said Dr. Ursua who led the project which was funded by the Government of Japan Trust Fund (GOJ-TF).

Remarkably, Dr. Urusa said, the local divers also reported that other fish were visibly becoming more abundant in the reefs.

According to the International Union for Conservation of Nature (IUCN), the Philippines is home to 10 species of seahorses, but seven are designated the global conservation status of "vulnerable" due to threats from overharvesting, pollution, and destruction of their coral reef habitat.

Seahorses are collected mostly because they are an ingredient in Chinese traditional medicine and also as part of the curio trade. Under Section 97 of Republic Act 8550, their exploitation and trade have been illegal in the Philippines since 2004.

To monitor the wild population of seahorses, local divers were trained by SEAFDEC/AQD on how to properly handle the delicate creatures. They also participated in informal lectures about seahorse biology and received training on determining their size, weight, and sexual maturity.

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A solar-powered hatchery, built to produce juveniles, was also run and managed by locals. "Pregnant" male seahorses were collected from a coral reef area and transferred to 10-liter pails, where they give birth, before being released back to the wild.

Juveniles were then raised on a diet of natural food available in the area and stocked in submerged nursery pens to grow for another three to six months. When the seahorses reached at least 5 centimeters in stretched height, measured from their crown to the tip of the tail, they too were released to repopulate the reef.

Dr. Ursua and her team also conducted annual lectures and information drives where students, teachers, fishermen organization members, and local government officials were oriented on seahorse biology and conservation.

In a "Draw and Tell" contest in 2017, 20 students from Molocaboc Integrated School created artworks that featured the importance of protecting the seahorse's natural habitat to safeguard their dwindling wild population.

A resident of Molocaboc Island observes a tiger tail seahorse *(Hippocampus comes)* as part of their resource enhancement training. *Photo by RD Dianala*

Dr. Shelah Mae Ursua, associate scientist at SEAFDEC/AQD, demonstrates to locals how to properly rear seahorse juveniles in 10-liter plastic pails. *Photo by RD Dianala*

Why Molocaboc?

"Molocaboc is within an identified Marine Protected Area (MPA) of Sagay City and thus it was an important aspect for the site selection. There was also a reported natural population of seahorses around the area," explained Dr. Ursua. As an MPA, Molocaboc Island and its flora and fauna are protected by law.

"The island also had an established and cooperative fisherfolks organization that partnered with us in the implementation of the project," added Dr. Ursua. "These people are the primary custodians of their natural resources. The more they will understand the biology and ecology of seahorses, the more they will appreciate the need for their management and preservation."

The project, along with the hatchery and nursery facilities, has been formally turned over by SEAFDEC/AQD to the Sagay City government in Dec. 17, 2019.

- JR PAGADOR

SEAFDEC/AQD librarian is 2020 PRC Outstanding Professional Awardee

STEPHEN ALAYON, head of the Library and Data Banking Services Section, joins the roster of Outstanding Professional Awardees chosen by the Professional Regulation Commission (PRC) of the Philippines. Under the Business Education and Social Services Cluster, Alayon is the sole librarian bestowed with the award.

According to PRC, the Outstanding Professional of the Year award is the highest recognition conferred by the commission to individuals who excelled and contributed significant impacts to society in their line of expertise.

He finished both Bachelor of Science in Computer Science and Master of Education (Mathematics) degrees at the University of the Philippines Visayas. He also graduated with a Master of Library and Information Science (MLIS) degree at the Central Philippine University (CPU).

Under his leadership at the SEAFDEC/AQD Library, Alayon pioneered numerous projects that remarkably contributed to information dissemination in the field of aquatic science.

He, along with his colleagues, developed the SEAFDEC/AQD Institutional Repository, where thousands of research papers and other references produced by the research center were made freely accessible to the public. The success of the online repository led to its recent adoption by other SEAFDEC departments in Thailand, Malaysia, Indonesia, and Singapore.

Alayon also facilitated exchanges and donations of textbooks and references to different fisheries schools across the Philippines.

As the current president of the International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC), he also initiated the distribution of the IAMSLIC Digital Library to 35 state universities and colleges around the country. The library boxes contain over 26,000 digitized publications from SEAFDEC, Secretariat of the Pacific Community, Aquatic Commons and OceanDocs repositories that users can access freely using their smartphones or laptops without the need for Data or Internet plan.

PRC 2020 Outstanding Professional Librarian of the Year, Stephen Alayon, during the turnover ceremony of digital library boxes to state college and universities during the 46th Anniversary of SEAFDEC/AQD last July 2019 at Tigbauan, Iloilo. *Photo by JM de la Cruz*

"All of these projects and outreach programs wouldn't be made possible without the support of my teammates at the Library section. I am very grateful for their cooperation and dedication," stated Alayon.

He also served as a resource person in numerous engagements where he covered topics on research made easy, scientific publishing, institutional repository, library technology tools, one reference services, plagiarism, scholarly communication, and digital scholarship, among many others.

Aside from his contributions to disseminating relevant aquatic science information, Alayon also spearheads NcelLIBERation, a group of volunteers who organize libraries in jails to allow Persons Deprived of Liberty (PDL) to have access to quality reading materials.

He is also an active member of librarian organizations such as the Philippine Librarians Association, Inc. (PLAI), Philippine Association of Academic/Research Librarians (PAARL), Association of Special Libraries of the Philippines (ASLP), Special Libraries Association (SLA), and Philippine Association of Teachers of Library and Information Science (PATLS).

With these initiatives, Alayon had received awards such as PAARL Outstanding Academic/Research Librarian 2012, ASLP Citation Award for Excellence in Research 2013, PLAI Distinguished Service Award 2014, Severino I. Velasco Award 2017, and Gawad sa Natatanging Laybraryan (Visayas) 2018, and SLA Asian Librarian Award 2014. He is also an IASSIST Fellow and Recipient of ACS Publication Travel Grant for Librarians (Asia-Pacific) in 2019.

"I am overwhelmed, grateful, and humbled to be able to receive this [award]," expressed Alayon. "This is both a huge responsibility and an honor. I hope that I will be able to serve as a role model for other young librarians." a

- JR PAGADOR

From the ground up: BFS former trainee establishes innovative aquaculture farm

THREE YEARS AGO, Elisa Claire Sy, armed with zero knowledge and a budding interest in rearing tilapia, took the plunge and braved the waves of the aquaculture industry.

In 2018, she and her business partner Marvis "Ong" Mirasol decided to focus on aquaculture with their company, E-Primate Incorporated. Initially starting to buy and sell computer parts and equipment from abroad, the company later specialized in marine ornamental fish before deciding to utilize their open ponds as fish farms instead.

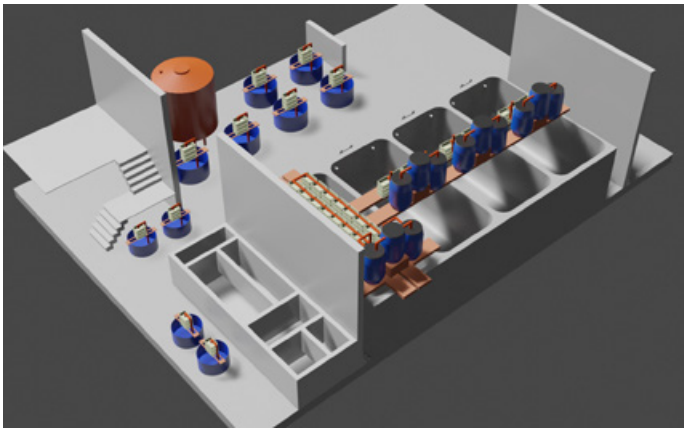
"There is a huge potential in the business of rearing tilapia, as it is also considered as a staple food resource for Filipinos," explained Sy.

In February 2018, Sy decided to take part in the Tilapia Hatchery and Grow-out Operations training course held at the Binangonan Freshwater Station (BFS) of SEAFDEC/AQD to equip herself with basic concepts in regards to farming tilapia.

"I was a graduate of education, so I don't know anything about the basics of fish farming, as compared to Sir Marvis, who graduated in BS Biology," explained Sy.

Members of the Management Team of E-Primate, Incorporated. From left to right: Charimae Diaz (Internal Affairs), Gregory Fulloso (External Affairs), Marvis "Ong" Mirasol (Chief Operating Officer), Elisa Claire R. Sy (Chief Executive Officer), and Michelle Anne Gomez (Administrative Affairs). *Photo by E-Primate, Inc.*

Employees harvest tilapia from indoor tanks inside one of E-Primate's facilities. *Photo by E-Primate, Inc.*



A 3D model of the Intensive PINAS system used in a facility in Indang, Cavite. *Photo by E-Primate, Inc.*

At BFS, Sy engaged in different lectures and hands-on practicals from resource persons. The training course made her realize the huge work that needed to be done and gave her new perspectives on how to rear tilapia.

"The lectures were easy to comprehend, and I absorbed the material better with the hands-on practicals as I learn better in tactile," discussed Sy.

Armed with her training experiences, Sy incorporated the knowledge she gained into her business venture and briefed her colleagues on the technicalities they needed to implement in their operations.

"We applied the learnings gained from the training towards the technicalities in our facilities. What we learned proved as an ideal entry point for us in aquaculture," shared Mirasol.

Innovations in aquaculture

Mirasol and Sy also shared that they have been working on innovating their operations through Intensive PINAS (Pinoy Innovating New Technologies in Aquaculture) .

Mirasol explained that their Intensive PINAS system was patterned after the Recirculating Aquaculture System (RAS). RAS is a commercial-scale, indoor tank-based fish farming system that accommodates high stocking densities while maintaining a stable environment for the fish.

Mirasol further discussed that E-Primate Inc. has managed to produce 300 to 400 pieces of tilapia per cubic meter with a grow-out period of only four months through this system. They also stated that this system gets rid of the earthy and musty flavor

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of tilapia fish meat that is usually an effect of the fish's environment in traditional ponds.

"We are confident with our system because it is grounded in core concepts we have learned from the training at BFS," reiterated Sy. She also stated that they have been very thorough in monitoring and logging their progress and made sure that their tilapia is given adequate nutrition with feeds.

While they acknowledge that one drawback of RAS is the expenses incurred in setting up the equipment needed, Mirasol and Sy assured that they are tailoring PINAS to become more applicable for Filipinos.

"Our materials and products are locally sourced and fabricated to bring the cost down," explained Mirasol. He also added that the business model they created for PINAS was designed to accommodate high-stocking density grow-out, which means that the gross produce covers operation expenses like electricity.

Harvested tilapia from E-Primate Incorporated farms are stored in Styrofoam containers for post-processing and delivery to their respective clients. *Photo by E-Primate, Inc.*

Mirasol and Sy also said that they are continuously developing and improving their system to propagate and endorse PINAS to the rest of the country soon.

Currently, E-Primate Inc. has three fully-operational tilapia farms located in Cavite, Marikina, and Bulacan. The company has also become a fish supplier to local markets located in Indang, Cavite, and Marilao, Bulacan.

- JR PAGADOR

Psychologist emphasizes mental health awareness in AQD seminar

Psychologist Ms. Mylah Shane Daliva (inset) presented a lecture on mental health awareness to AQD staff last 30 October 2020 via Zoom.

MENTAL HEALTH is one of the most pressing issues in the world, especially during a pandemic. To educate staff on mental health awareness, the AQD Seminar Committee (ASEC) invited a registered psychologist to conduct an online seminar last 30 October 2020.

In a lecture entitled "Invisibles: Surviving Daily Unseen Battles," Ms. Mylah Shane Daliva, a registered psychometrician and currently a psychologist from Western Visayas Sanitarium, presented the importance of being holistically healthy which she defined as a state of being physically, socially, and mentally fit to function in today's society.

Ms. Daliva shared crucial information on the subject, such as risk assessment, identification of signs and symptoms, and risk management. These information are essential in reducing a person's prolonged suffering and tendencies to commit suicide. In 2020, there has been an alarming spike in suicide cases, particularly in Iloilo, where more than 70 cases were recorded this year.

With this, the Department of Health has established suicide prevention hotlines in the country.

- JM DE LA CRUZ

For those who need help, they could call **0917-899-8727 (USAP)** and **0917-989-8727 (USAP).** Other helplines include that of In Touch Philippines with call crisis lines **+63 2 893 7603 (Landline); +63 917 800 1123 (Globe)**; and **+63 922 893 8944 (Sun).** The Philippine Red Cross' 24/7 suicide prevention hotline, toll-free **HOPELINE 2919 (for Globe & TM Subscribers) 0917 5584673 or 8044673.**

AQD reinforces efforts for sustainable aquaculture amidst 'new normal'

SEAFDEC/AQD doubles-down its efforts towards the transfer of sustainable aquaculture practices and technology for its stakeholders in the middle of the COVID-19 pandemic.

Updates on 46 studies under the organization's different programs were presented at its annual review and planning meeting held last 24 September to 25 September at Tigbauan, Iloilo.

With the outbreak of the COVID-19 pandemic, several studies were revealed to have been hampered in their progress. Still, SEAFDEC/AQD Chief Dan Baliao and the respective study proponents reassured that they are consistently finding ways to hasten progress.

In particular, studies on cost-effective feeds were given the highlight of the discussion. As an offshoot of the department's fry sufficiency program, study leaders under Dr. Roger Edward Mamauag, head of the Technology and Verification Division, stated that field-testing for cost-effective feeds for tilapia and shrimp are underway.

"Rest assured that we are working towards the direction of being able to lower down the production cost of aquaculture by incorporating sustainable ingredients in feeds," explained Mamauag.

SEAFDEC/AQD Chief Dan Baliao delivers his keynote speech during the 2020 In-House Review and Planning Meeting held last 24 September to 25 September 2020. *Photo by JF Aldon*

Aside from research, the respective training programs of the organization were also made to adapt to the 'new normal' by being converted to online distance-learning courses for continuous learning of SEAFDEC/AQD's constituents.

Baliao also reiterated the importance of active collaboration with respective agencies such as the Department of Agriculture's Bureau of Fisheries and Aquatic Resources (DA-BFAR), National Fisheries Research and Development Institute (NFRDI), and the Department of Science and Technology Region VI (DOST-VI) among others.

Four external evaluators who attended the meeting via Zoom also extended their support on behalf of their respective agencies.

Dr. Emelyn Flores, DOST assistant regional director for technical operations, Mr. Rene Bocaya of Alson's Aquaculture Corp, Mr. Joseph Martin Borromeo of the BFAR National Office, and Director Remia Appari of BFAR Region VI were present during the meeting.

The strategic meeting has also been an avenue to openly discuss concerns and problems encountered by the researchers as well as exchange ideas on possible strategies to amend these difficulties.

"As we stand at the threshold of the aquaculture industry, we are dedicated to provide assistance towards our stakeholders, even in the middle of this pandemic." emphasized Baliao. a

- JR PAGADOR

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Dr. Sayaka Ito is the new deputy chief of the Southeast Asian Fisheries Development Center Aquaculture Department to serve a 2-year term from 1 Oct. 2020 to 30 Sept. 2022. *Photo by JR Pagador*

Japanese conservation biologist is new AQD Deputy Chief

SEAFDEC welcomed the new deputy chief of its Aquaculture Department (AQD) based in Iloilo last 20 October 2020.

Dr. Sayaka Ito, a Japanese scientist with expertise in aquatic conservation biology, replaced fellow Japanese Dr. Koh-ichiro Mori who served as the Deputy Chief from April 2018 to June 2020 in this organization that is mandated to conduct scientific research to generate aquaculture technologies, develop skilled manpower for the aquaculture sector, and disseminate aquaculture information.

Upon endorsement by the Government of Japan, SEAFDEC Secretary-General Malinee Smithrithee appointed Dr. Ito to a 2-year term from 1 October 2020 to 30 September 2022 wherein he will also serve as co-manager of the Japanese Trust Fund which supports several research projects in the Philippine-based SEAFDEC/AQD.

Department Chief Dan Baliao welcomed Dr. Ito at the SEAFDEC/AQD headquarters in Tigbauan, Iloilo and introduced him to other senior officials. The new deputy chief was then toured around the different facilities and offices of the research complex.

Dr. Ito has experience working in Lao People's Democratic Republic where they established a research-based stock management system for their indigenous high-value freshwater prawn. The system also considered the customs and behaviors of the locals and eventually contributed to the sustainable use of the prawn resource and improvement in the income of the people.

Immediately prior to his appointment, Dr. Ito worked for seven years at the Hokkaido National Fisheries Research Institute of the Japan Fisheries Research and Education Agency (FRA).

As the leader of the Stock Enhancement Group, Dr. Ito and his colleagues examined the migration pattern and habitat use of high-value prawn and the environmental characteristics of the kelp (Laminaria) fishing grounds using GIS (Geographic Information System). He also studied the business structure of small-scale fishing households in the coastal area of eastern Hokkaido.

From 2006 to 2013, he was also a senior researcher at the Fishery Division of the Japan International Research Center for Agricultural Sciences (JIRCAS). During his 7-year stint with the organization, he worked on the stock management system of prawn in Lao People's Democratic Republic.

From 2003 to 2005, he became a Postdoctoral Research Fellow at the Center for Marine Environmental Studies at Ehime University.

He became involved in researches examining non-native freshwater fishes and its interspecific interactions with native fishes in Japan.

Dr. Ito also briefly worked as a junior high school science teacher from 2005 to 2006 at Komatsu Junior High School in Saijyo City, Ehime, Japan. From 2002 to 2003, he also taught science at the Hanada Junior High School for Handicapped Students in Nagano, Japan.

He has published several research publications from 2000 to 2018, with his major outputs covering stock enhancement and ecology of fluvial prawn. He also conducted studies on different species, such as the Pacific herring, stream goby, and snakeskin gourami.

- JR PAGADOR