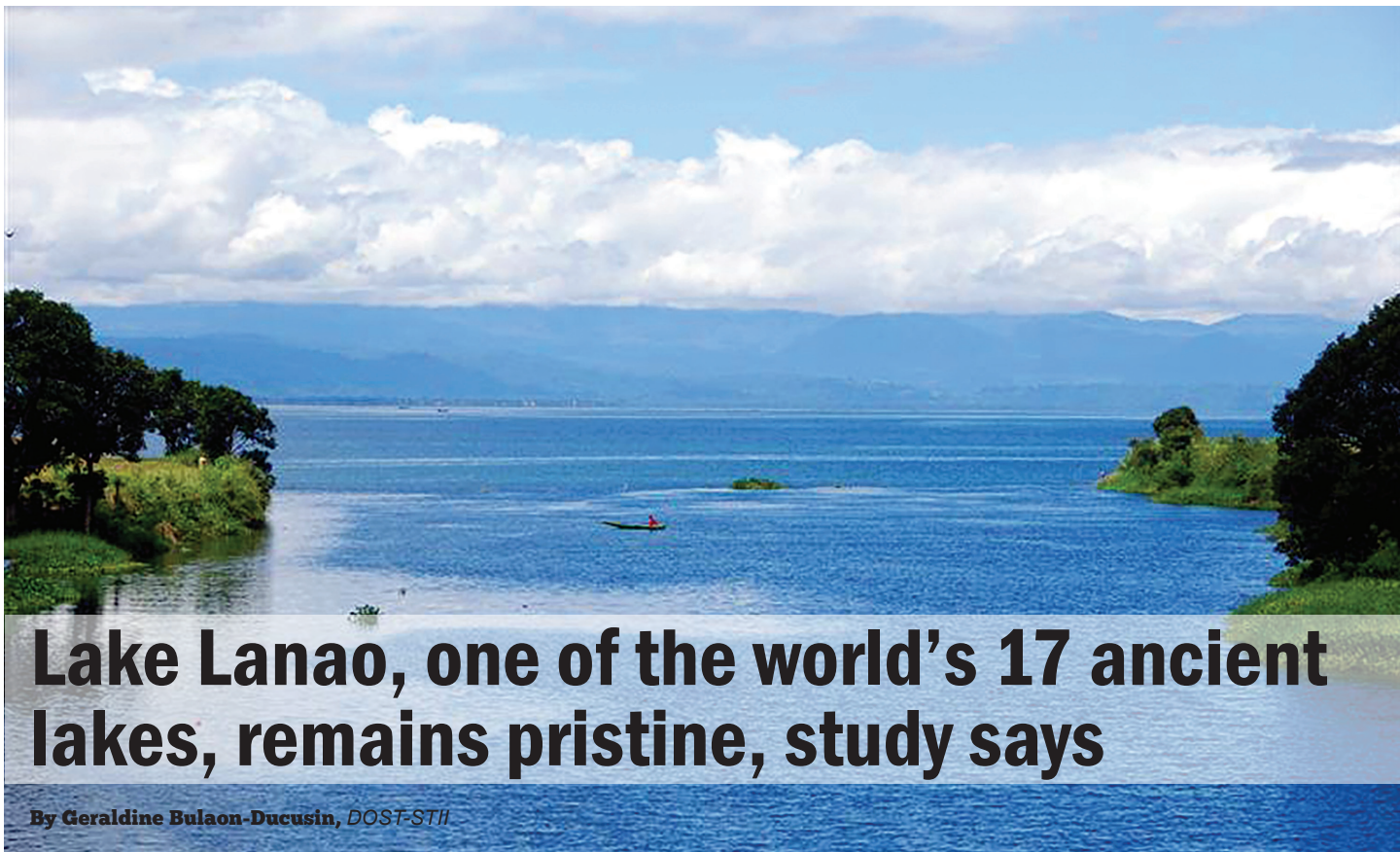


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## Lake Lanao, one of the world's 17 ancient lakes, remains pristine, study says

By Geraldine Bulaon-Ducusin, DOST-STII

Photo from [www.da.gov.ph](http://www.da.gov.ph)

**“Our Lake Lanao from all sampling sites is still pristine; our water is still clean.”**

This was disclosed by Dr. Fema M. Abamo, a professor of Mindanao State University in Marawi City, during her webinar presentation for the regional basic research caravan for Bicol, as conducted by the Department of Science and Technology-National Research Council of the Philippines (DOST-NRCP).

The water quality of Lake Lanao in five sampling sites namely Marawi City, Ramin, Balindong, Taraka, and Binidayan was monitored for two years by using the abundance of one-celled protozoan ciliates as bio-indicators of organic pollution. The highest ciliate abundance was observed in the littoral zone of Balindong at 0.0061cells/mL during the dry season. A previous study categorized lakes as ultra-oligotrophic when their ciliate abundance is equal to or lower than 2.4cells/mL; Lake Lanao, therefore, is

ultra-oligotrophic having ciliate abundance below the set range in all sampling sites. Such lake category has very low nutrients, scarce growth of plants and algae, and high dissolved oxygen which are indicative of a clean, healthy, good water quality and not organically polluted lake.

Organic pollution occurs when large quantities of organic compounds are released into aquatic ecosystems. Sources of pollution usually come from wastes generated by agricultural, residential, and industrial activities. High levels of inorganic nutrients such as nitrogen and phosphorus in water can also cause an overgrowth of plants and algae. As plants and algae die, they become organic materials in the water. Decomposition of these organic materials uses up high amounts of oxygen, thus depriving the fish population of needed oxygen that causes fish kills in the lake. These decaying organic compounds serve as substrates for the microorganisms,

increasing the bacterial population which in turn supports the abundant growth of ciliates.

Ciliate abundance varied as the season changed, i.e., lower in the non-mixing season and higher in the dry season indicative of nutrient and organic load fluctuations in the lake as the season changed. Water samples for this study were obtained from 50-100 meters away from the lakeshore in the shallower littoral zone and towards the deeper open water in the pelagic zone.

Their results were corroborated by the findings of another group in the same program conducting the physical and chemical characterization of the lake and found the same that the lake is not polluted but still healthy and has good water quality.

The study, which was funded by the DOST-NRCP, was conducted during a three-year period, but was temporarily suspended and eventually allowed to resume after the Marawi siege.

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# C-FoSH facility offers vacuum freeze dryer to MSMEs

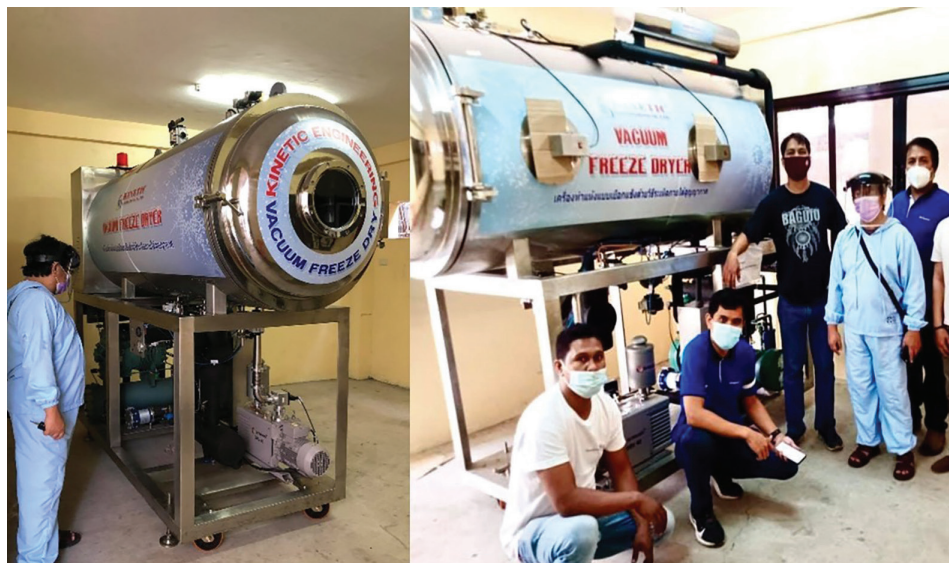
By Wilma G. del Rosario and Demee Angelica S. Ludia, DOST-CALABARZON

**T**he micro, small, and medium enterprises (MSMEs) in the CALABARZON region can now avail of the vacuum freeze dryer housed at the CALABARZON Food Solutions Hub (C-FoSH), a facility jointly managed by the Department of Trade and Industry (DTI) in partnership with Laguna State Polytechnic University (LSPU), Association of Laguna Food Processors (ALAFOP), and co-funded by the Department of Science and Technology-CALABARZON.

The Vacuum Freeze Dryer (VFD) is one of the equipment in the facility that can greatly improve the food products of MSMEs in the region and will greatly increase their market competitiveness.

Vacuum freeze-dried foods are popularly consumed by astronauts and the military, and are usually used for emergency food packs. More so, freeze drying is an innovative method that can help assure MSMEs of high-quality products. Freeze drying is a drying method best known to help retain the nutritional quality, taste, shape, and size of the food product.

Furthermore, vacuum freeze-dried foods help ensure consumers that they are getting real fruits and vegetables in their diets. The VFD method also removes water from the food variant, ensuring that there is no room for bacterial growth. VFD's benefits in turn help food manufacturers in maintaining good quality and safe food packaging for their products.



DOST Provincial Director Engr. Samuel Caperiña inspects the newly acquired Vacuum Freeze Dryer at the Calabarzon Food Solutions Hub. (Photos from Vetch Caperiña).

The C-FoSH facility has been operational since 2017 and has been continuously evolving to better cater to the needs of the MSME food industry in CALABARZON. Aside from the VFD, C-FoSH also houses a variety of equipment which MSMEs could avail of for lease to be used in food production and packaging. Incidentally, the C-FoSH facility provides added

support to MSMEs under the Small Enterprise Technology Upgrading Program or SETUP, one of the flagship programs of the DOST that is also being implemented across the country by DOST regional offices. For more information on C-FoSH's services and other programs of DOST-CALABARZON, visit the Facebook pages, [fb.com/dostcalabarzon](https://fb.com/dostcalabarzon) or [fb.com/alafof](https://fb.com/alafof).

Lake Lanao...  
from page 1



"The lake was reportedly deteriorating due to increased human population and activities around the lake," Abamo said, explaining why there's a need to conserve the lake's good condition, especially now that the people have resettled back near the lake after the Marawi siege.

The researchers suggested to the local government to strengthen their policies to maintain the healthy condition of the lake.

"We have recommended to the local government to create and implement stricter policies and ordinances to conserve the lake, and regulate and check both the residential and business establishments around the lake," Abamo said.

According to the World Lake Database, Lake Lanao is estimated to be around 10 million years old and is listed as one of the 17

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(Photo lifted from the zoom presentation) The research team during field work for the Lake Lanao project after the Marawi siege.

# TIMPLADO makes stronger ‘barako’ coffee with DOST training on food safety

By John Maico H. Hernandez, DOST-PSTC Batangas

**L**IPA CITY, Batangas – Ala eh! Timpladong tamang tama! This is how Batangueño describes this coffee variety. In fact, TIMPLADO, an offshoot company of Circa 1740, underwent a two-day training on Good Manufacturing Practices (GMP) to further strengthen, not only their barako (Liberica) coffee blends, but more so their food safety measures in preparation for the opening of its additional markets this year.

There were 13 employees, mostly newly hired, who attended the training on food safety standards in different production processes conducted on 25-26 January 2021 at the TIMPLADO Coffee Shop located in Barangay Mataas na Lupa, Lipa, Batangas.

The Department of Science and Technology Region IV-A (CALABARZON) provided the DOST Unified Food Safety Training Modules for MSMEs. The training was facilitated by DOST-CALABARZON Food Safety Team members composed of Mhark Elgine Libao, John Michael Florendo, and John Maico Hernandez, who are all from the Provincial Science and Technology Center (PSTC) Batangas.

The training exercise covered topics on basic food hygiene, food hazards (e.g. biological, chemical, physical and allergens), cross-contamination, personnel hygiene, food contact surfaces, pest control, cleaning and sanitation, and documentation. Activities on hand washing, food hazards, and cross-contamination were also conducted to simulate situations during food preparation that affect food safety.

Although food safety practices are already in place, TIMPLADO’s Chief Executive Officer Kathleen Manto fully recognized the impact that the training provided in improving the knowledge and practices of their employees. For Manto, the training was a boost to the standard procedures they have been following to further improve the quality of their products and ensure their customers’ safety. The training came at an



TIMPLADO employees listen during the GMP training conducted by DOST-CALABARZON.

opportune time since the company plans to open additional markets.

On the other hand, Ariestelo Asilo, TIMPLADO’s Chief Operating Officer, shared how the training served as a springboard in their application for a license to operate with the Food and Drug Administration. He also mentioned his hope for the approval of their project proposal to DOST-SETUP Program that can further support their GMP implementation aside from upgrading their processes.

TIMPLADO is a food and beverage company focused on creating rich, full-bodied coffee blends. What is unique with TIMPLADO’s products are the interesting variants named after famous Batangueña heroes, namely: Marcela, Gabriela, Teresa, Josefa, Melchora and Glicería. These names complement the unique flavors of strong barako blends, barako blend with white chocolate and milk, barako blend with coco sugar, and barako blend with chili powder and coco sugar.

Furthermore, the branding structure also mirrors how the company empowers and provides livelihood to stay-at-home moms through the packaging of products. Aside from the iconic characterization of their coffee blends, TIMPLADO operates to promote inclusivity by partnering closely with coffee farmers, communities, and markets with the shared commitment in revitalizing the Batangas barako coffee.

*Lake Lanao...*  
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ancient lakes of the world with a tectonic-volcanic origin. It is the second largest lake in the Philippines and the largest one in Mindanao, home to 18 endemic cyprinids or fishes related to carps and minnows. Remove “that are found nowhere else in the world” since the sentence already has the word “endemic”.

For generations, Lanao Lake has been a potent natural resource that breathes life to the Maranaws, as a source of their food and water, livelihood, religious practices,

transportation and sports. But more than anything, the lake has shaped the Maranaw culture and tradition to what it is now and it has become imperative for the Maranaws to preserve its pristine beauty for a better and sustainable future.

Abamo is a member of DOST-NRCP’s 4,944 research pool involved in various scientific disciplines. For more webinars on basic research, interested parties can visit Research Pod, a Facebook Page of the council.

## ABOUT US

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The study recommended the urgent implementation of an age-appropriate comprehensive reproductive health education.

Photo from www.philstar.com

## Reproductive health education, vital to preventing teenage pregnancy during the pandemic

By **Geraldine Bulaon-Ducusin**, *DOST-STII*

**“T**eenage pregnancy is unplanned, but not necessarily unwanted, and unplanned pregnancy means no regrets.”

These are some of the findings presented by Dr. Gloria Luz M. Nelson, professor of sociology, University of the Philippines Los Baños, from the study of 18 teenagers from nine provinces in seven regions in the Philippines who are pregnant, mothers, or are both pregnant and are mothers at the same time, during the COVID-19 pandemic crisis.

When asked how it is to be a mother, teens responded that being a mother means a source of joy, excitement and inspiration. No one had attempted to abort or commit suicide.

Majority, except one, however, expressed regret over being pregnant, “Napakaboring, ‘di ako makalabas, di ako makagala. Kain, tulog na lang ako...mag-isip ng mga bagay na walang kwenta, makipagchismisan sa mga kasama ko sa bahay, mangarap ng napakalalim na imposibleng nangyari” [It is boring, I cannot leave the house to roam around. Eat, sleep only...vague thoughts, gossiping with my housemates, dream big but I know it is impossible for it to come true]

Further, these teens view pregnancy as a consequence of having a boyfriend and that sexual abstinence and use of contraceptives are not being practiced. Also, for those interviewed, being intimate is an expression of love and respect.

While the study cannot provide a general conclusion, given its small sample size and the qualitative method employed in the study, it however, provided vivid descriptions and meanings of the experiences of the Filipino pregnant teens during the COVID 19 pandemic crisis.

The stories told by the teens show that family members, partners, husbands, relatives and friends are the main source of financial and emotional support of the teenagers. Most of these teens are not currently enrolled but have plans to continue their studies since they are aware that education can help provide a better future for their children.

Nelson cautioned, though, that the study is biased towards teens with access to cellular phones. The in-depth interviews that lasted for over an hour, were conducted via Facebook Chat or Messenger, and this leaves out those who did not have access to communication devices. Nelson further shared that most of the time, cellphones are not for the exclusive use by teens but for the use also of other members of the households.

From the researcher’s perspective, the situation of teenage pregnancy and teenage mothers means facing multiple burdens that include the following: having a low to no income, lack of education, less employment opportunities, and health risks for both the mother and the unborn child.

In a related study in 2020, it was estimated that two million Filipino women, 15-49 years

old, are expected to get pregnant due to COVID-19 lockdowns, and 10 percent of these pregnancies will come from those below 20 years old.

One of the recommendations of Nelson is to urgently implement an age-appropriate comprehensive sex education, which according to them is not a privilege, but a right of the youth to know about reproductive health from the right sources. Nelson added that sex education does not only mean teaching the youth on the proper use of contraceptives, but includes rational planning in terms of the following: when they want to have kids, how many they want, how many years of interval between children, and learning to say “No” over sexual advances.

For his part, Gregorio E.H. Del Pilar, President of the Department of Science and Technology - National Research Council of the Philippines, emphasized the importance of qualitative research, such as this, which gives people the knowledge on the range of varying experiences, instead of the trends commonly provided by quantitative studies.

The study, the 7th in the Kapakanan ng Tao sa Oras ng Pandemya-COVID (KTOP) webinar series, was viewed by over 300 participants, some of whom came from the House of Representatives, Commission on Youth, Department of Social Welfare and Development, National Security Council, and Population Commission. KTOP is a basic research promotion initiative of the DOST-NRCP.