PHilMech

Official Newsletter of the Philippine Center for Postharvest Development and Mechanization

Cover Story

Resounding Joy of Using the ATS Technology

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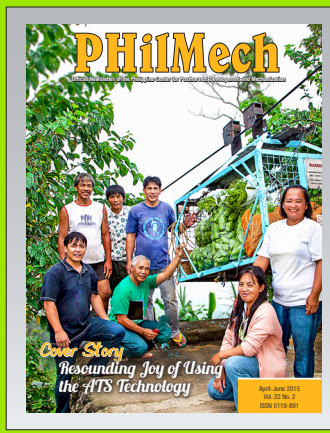
Erratum:

On the TREATS section, page 8 of our January-March 2015 Issue, we mistakenly place a photo of a grain cleaner instead of a soybean sorter.

COVER



Members of the Taloy Sur-Bawek Farmers Organization in Tuba, Benguet, have been using the agricultural tramline system for almost five years.

Members of a women's group in Nueva Ecija use the Multi-commodity Solar Tunnel Dryer to add value to their produce such as tomato.

PHilMech projects win at PSAE Nat'l Convention

The PHilMech project 'Accelerating the Establishment of MCSTD-Based Enterprises through the Social Laboratory' won the second place, both in technical paper and poster under the agricultural processing, environment and waste utilization category, at the Philippine Society of Agricultural Engineers (PSAE) National Convention in General Santos City on April 19-25.

The project aimed to 'encourage establishment of new multi-commodity solar tunnel dryer enterprise through an active partnership with the Kababaihang Masigla ng Nueva Ecija (KMNE) as social laboratory.

The project had assisted various farmers' organizations, women's group and small and medium enterprises from Bulacan, Pampanga, Bicol region, Cagayan, and Batangas in improving and developing their products through the MCSTD.

Another social laboratory was also established at the Marinduque State College which is known for their breadfruit or rimas flour production. The said project was an undertaking of the Enterprise Development Division of PHilMech and implemented by Engr. Danilo M. Gamalog, Priscilla C. Castillo, Dr. Helen Martinez, and Engr. Genaro M. Tolentino.

Also, another PHilMech project entitled Development of Fluidized Bed Dryer for Complete Drying of High Moisture Paddy won the second prize for the poster competition under the Farm Power and Agricultural Mechanization category.

The project is an effort of the Agricultural Mechanization Division of PHilMech to find a better and alternative solution in drying high moisture paddy. It is implemented by Engr. Reagan J. Pontawe, Engr. Roselyn B. Villacorte, Engr. Nestor T. Asuncion and Dr. Romualdo C. Martinez.

The PSAE National Convention is the biggest annual gathering of agricultural engineers in the country. According the the PSAE website (www.psae.org.ph), the convention is among the highlights of the celebration of the 26th Agricultural Engineering Week which is observed every fourth week of April.

Simultaneously with the PSAE Convention is the 12th International Agricultural Engineering Conference. The two events were being by Agricultural Engineers and students from all over the country and participating nations such as Japan, Korea and Canada.
VBCaliguiran

PHilMech readies for ASEAN integration

'Mechanization and Postharvest Technologies: PHilMech's Contribution to the ASEAN Economic Community,' was the theme for the 37th PHilMech anniversary and 16th Postharvest Loss Prevention Week Celebration.

The weeklong celebration was held on May 25-29, 2015 at the PHilMech headquarters in Science City of Muñoz, Nueva Ecija.

An industry day held on May 27 was the highlight of the celebration. It was attended by farmer's organizations and agricultural technicians from different local government units in Nueva Ecija, RD&E partners, and former PHilMech executives.

PHilMech Director Rex Bingabing presented to the guests and visitors the commercialized and emerging technologies, and new projects of the agency which could help to achieve global competitiveness. These technologies were also in-display throughout the event.

He also shared his guiding principle of doing research and development efforts, "short duration and high impact R&D." Director Bingabing also presented PHilMech strategies on technology generation and transfer such as partnerships and cooperation, licensing of local manufacturers, and registration for intellectual property rights, among others.

These technologies and systems, according to Director Bingabing, will help the stakeholders to cope with the incoming ASEAN economic integration because these will increase competitiveness by reducing the cost of production and improving the quality of their produce.

Former NAPHIRE Director Dr. Santiago Obien also stressed that our country is ready for the regional economic integration through the export quality produce and technologies.

PHilMech was mandated to 'generate, extend and commercialize appropriate and problem-oriented agriculture and fishery and postharvest mechanization technologies.'

The institution, first known as NAPHIRE, was created on May 24, 1978 through Presidential Decree 1380 to spearhead the development of the postharvest industry. In 1992, NAPHIRE was transformed into a regular agency of the Department of Agriculture

> **short duration and high impact R&D**

through Executive Order (EO) 494 and renamed into Bureau of Postharvest Research and Extension (BPRE).

The agency became the Philippine Center for Postharvest Development and Mechanization in 2010 through EO 366 or the governments' rationalization plan.

Its mandate was further reinforced through the Agriculture and Fishery Modernization Act of 1997 and Agricultural and Fisheries Mechanization Act of 2013.

Meanwhile, the observance of the Postharvest Loss Prevention Week every fourth week of May was started in 2000 through Proclamation 298.

Other activities during the event include technology exhibit, technical symposium, drumbeating activities at the regional level and recognition of PHilMech Natatanging Kawani and Loyalty Service Awardees.

For 2014, eight PHilMech employees were recognized for their meritorious accomplishment and commitment as public servants. Mr. Reynaldo Guerra, Administrative Aide IV, and Ms. Daisy Tesorero, Science Research Assistant, were awarded as Natatanging Kawani Admin Support First Level Category and Technical First Level Category, respectively.

Meanwhile, the Natatanging Kawani for Support Services Junior and Senior Categories were Ms. Jane A. Foronda, Administrative Officer IV, and Ms. Remedios S. Ortiz, Accountant IV.

Engr. Rodelio Idago and Dr. Michael Gragasin were named Natatanging Kawani for Research and Development Junior and Senior Categories, respectively. While under the Training and Extension Junior and Senior categories, the recipients were Ms. Priscilla Castillo, Science Research Specialist II, and Ms. Helen R. Calica, Supervising Science Research Specialist.Ms. Calica was also the 2014 Dangal ng PHilMech for exemplifying the corporate values of the center namely creativity, integrity, teamwork, excellence and spirituality. *VBCaliguiran*

Intermediaries train on mechanized rice crop establishment

The Philippine Center for Postharvest Development and Mechanization (PHilMech) through the Technology Management and Training Division (TMTD) and Agri-Infrastructure and Coordinating Unit (AICU) conducted the "Specialized Training Course on the Mechanization of Rice Crop Establishment" on May 11-15, 2015 at PHilMech Training Hall, Science City of Muñoz, Nueva Ecija.

The training aimed to develop, equip, and enhance the technical capability of the participants on rice mechanization and postharvest technologies.

It was attended by 38 participants composed of technical staff from the Office of the Provincial Agriculturist Office (OPA), Department of Agriculture Regional Field Office (DA-RFO) from various provinces in Luzon and PHilMech During the opening program, PHilMech-Director III, Engr. Raul R. Paz, encouraged the participants to share the knowledge and technologies that will be gained from the training.

The five-day training course was comprised of lecture-discussion and hands-on exercises. The lecture-discussion focused on land preparation (plowing, harrowing, and levelling), seedling preparation, and transplanting that were discussed by Engr. Aldrin Badua, Engr. May Ville Castro, and Engr. Raul R. Paz, respectively.
In addition, subsequent to discussion on transplanting was actual demonstration of parts & function of walk behind transplanter and test drive of the machine by the participants.

On the other hand, the remaining days were allotted to hands-on exercises conducted in Maligaya, Science City of Muñoz. Each participant was able to operate the hand tractor (for levelling), four-wheel tractor (for harrowing), and both riding type and walk behind transplanter. They also prepared seedlings using trays and double mulching technique. Aforesaid speakers together with Engr. Nino Bengosta, Engr. Dindo Labrador and Mr. Rayman Marquez facilitated the activities.

The participants commented during the closing program that technical knowledge on the machineries is indeed of importance to attain best result. They also gave positive feedbacks for the new knowledge gained from the training.

Ms. Helen Calica, Training Section Chief, congratulated the graduates who successfully completed the course. She motivated especially to the new participants that the training is just the first step before they can be considered as full-pledged member postharvest specialist network of PHilMech. They will undergo more training just like the senior members of the network that was established way back in 1990's, she added. *SBBanglig*

PHilMech, BSU launch SOA on postharvest handling of semi-temperate veggies

The Philippine Center for Postharvest Development and Mechanization (PHilMech) in collaboration with the Benguet State University (BSU) launched the "School-on-the-Air (SOA) on Postharvest Handling of Selected Semi-Temperate Vegetables and other High Value Crops" last May 25, 2015.

The SOA registered 224 enrollees, majority came from the province of Benguet and some are from the neighboring provinces such as La Union and Nueva Vizcaya.

Benguet is known as one of the major producers of vegetables in the country. According to the Provincial Government of Benguet, the province supplies 80% of the vegetable needs of Metro Manila.

The SOA module presents the latest technologies developed by PHilMech and postharvest practices for various semi-temperate vegetables like lettuce, broccoli and other high value crops such as potato, cassava, coffee etc.

The SOA provides timely and appropriate information especially the small-scale producers of the said commodities in the province.

The SOA is aired daily at five in the morning at DZWT 560 kHz with 15-minute airtime. The airing time is strategically scheduled for the farmers who are waking up early to prepare for their early farming activities.

The SOA is expected to culminate on July 1, 2015. This SOA specializes and focuses on the information needs assessment conducted from the radio audience.

The SOA is second of the series conducted under the collaboration project, "Enhancing the Agricultural Extension Delivery System on Postharvest and Mechanization through the SCUs and the Techno Gabay Program." The first SOA was about "Postharvest Handling of Horticultural Crops" and it produced 250 graduates in June 2014.
RDDeguzman

T.R.E.A.T.S.

ALL ABOUT VEGETABLES

TIPS

Leeching out nutrients from veggies

Better chop your veggies into larger pieces. Chopping them finely will expose the veggies into more surface area that will come in contact with water or air. This will leech out more of their nutrients.

www.liz4fitness.com
www.prevention.com

RECIPE

Malunggay Omelet

Want to add nutrients to your regular, plain scrambled eggs? Make a malunggay omelet. Chop a handful of malunggay leaves. Mix into beaten eggs. Add salt to taste. Fry and serve hot.

www.notyourordinarymum.com

EQUIPMENT

Steamer, Microwave Oven, Pressure Cooker

In cooking veggies, the best cooking methods are steaming, microwaving and pressure cooking. Thus, the steamer, microwave oven and pressure cooker or a combination of the three, will be your most reliable partner in the kitchen.

www.wearever.com
www.lg.com
www.healthyfoodcorner.com

Vegetables are super foods. They contain large amounts of vitamins, minerals and antioxidants. They are within reach of the ordinary people. *Malunggay*, mungbean sprouts *(toge)* and garlic are some of the super vegetables found in the country.

ADVISORY

Pinggang Pinoy

According to the Food and Nutrition Research Institute of the Department of Science and Technology (DOST), the healthy Filipino meal should consist of 33% rice, 33% vegetables, 17 % meat and 17% fruit.

Visually, this is presented in the Pinggang Pinoy graphics of FNRI which is divided into four portions. The malunggay represents the vegetable portion. Banana represents the fruit portion. Fish represents the meat portion. And a cup of rice represents the grain portion.

www.nutrihealthness.com

TRIVIA

Did you know that...?

- The smaller the pepper, the hotter the taste.
- Most of the nutrients and fiber of potato lie just below the skin.
- The skin of cucumber is rich in fiber and nutrients. Its peel is also edible.
- Smaller eggplants have fewer seeds and are less bitter.

gardening.about.com
www.flickr.com
www.da4niyu4astok.ru
www.plants-unlimited.com

SELECTION

Guide in Selecting Your Veggies

- Choose broccoli with firm stalks, tight florets and crisp green leaves.
- Choose firm, unblemished stalks of celery.
- Choose cucumber that are uniformly green.
- Choose cauliflower heads with tightly packed, creamy white florets.
- Choose okra pods that are young and tender.

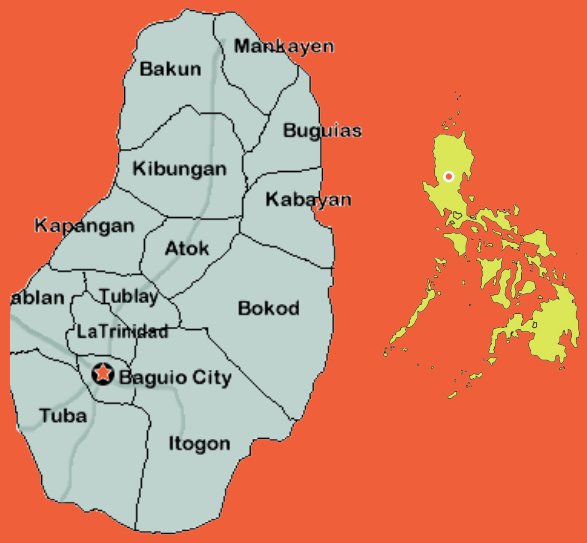
www.rodanto.co.uk
www.fanpop.com
cliqq.co.uk

PH DEVELOPMENT PLAN

Benguet

The province is the country's top producer of temperate vegetables. It is dubbed as the "Salad Bowl of the Philippines."

Located in northern part of Luzon, Benguet lies in the southern most part of the Cordillera Administrative Region (CAR). The province has 13 municipalities, with La Trinidad as the capital town.



Agricultural Profile

Agriculture is the major source of livelihood of the people. Among the top agricultural commodities are vegetables, strawberries and cut flowers. Coffee and rice are also grown.

Vegetables grown include Chinese cabbage, broccoli, cauliflower, potatoes, carrots and other temperate vegetables.

Postharvest Situationer

Postharvest losses in most commodities is one of the problems besetting the agriculture industry. Not only does it translate to food loss but also financial losses. Reducing the postharvest losses would mean economic gains for farmers and alleviation of food insufficiency.

Postharvest facility requirement for vegetables showed that the province needs more facilities for efficient postharvest handling of vegetables like agricultural tramlines and cold chain facilities.

Proposed Postharvest Projects

The following postharvest projects derived from the consultation and planning workshop of the industry stakeholders include the establishment of the:

- Integrated Postharvest Facilities Service Center
- Community-based Drying Center
- Small-Scale Processing Center for Traditional Rice
- Cold Storage Depot
- Cold Chain for Cutflower and Strawberry
- Agricultural Trading Post with Cold chain Facilities for Fruits and vegetables
- Minimal Processing and Packaging Plant for Vegetables
- Agricultural Tramline System
- Small-scale Coffee Processing Plant
- Enhancement of the Benguet Cold Chain

Source:
Benguet Postharvest Development Plan (2008-2017)

Technical and Socio-Economic Evaluation of Non-Refrigerated Storage System for Smallholder Onion Farmers

Rodelio G. Idago, Renita SM. Dela Cruz and Domingo R. Miranda

The study was conducted to assess the technical and socio-economic viability of non-refrigerated storage systems for smallholder onion farmers who comprise majority of the country's local producer.

Non-refrigerated storage refers to storage technologies or practices that do not apply refrigeration system, which is the typical cold storage facility. Rather, it utilizes ordinary ambient condition or higher temperature to prolong the shelf life of the crop. This low-cost storage system intends to provide alternative solution to high storage cost, insufficiency of cold storage facilities and ultimately provide smallholder farmers some window of flexibility in the disposal of their produce.

Technical evaluation of the storage performance of non-refrigerated storage systems such as hanger and high temperature storages, and cold storage (as control) was conducted using Red Pinoy cultivar. Technical parameters such as percentages of physiological weight loss, sprouting, rotting and marketable bulbs were recorded every 14 days interval from April 2014 to November 2014. Results revealed that percentage of physiological weight loss, rotting and sprouting increases with storage period for all storage systems with significantly ($P<0.05$) higher values observed for hanger (57%), followed by high temperature (49%) and cold storage (24%) in just five months. In seven months storage, losses reached 93%, 85% and 38% in hanger, high temperature and cold storage, respectively.

Application of profit maximization suggests that the optimum storage period for hanger and high temperature storage is 112 days with maximum profit of P225 and P250 per bag of 25 kg capacity, respectively.

In the case of cold storage the maximum profit obtained is P290 per bag. Partial budget analysis between immediately selling half of their harvest versus storing it in non-refrigerated storage for 112 days suggests that a smallholder farmer will have incremental income of P56,484 to P60,968 attributable to price increase. Economic analysis of storing onion versus the traditional ambient storage resulted to NPV of P43,161.21 and ERR of 19.03% suggesting that the society will be better-off using non-ref over the status quo.

While cold storage appeared to be the most technically and financially viable option for long term storage requirement to provide the supply during the lean months, non-ref storage can provide the medium-term storage requirement between the peak and lean periods, there by skewed supply of onion would be more evenly distributed across the year. While the application of cold storage provides the highest returns among the storage methods, it is however, most of the time, inaccessible to smallholder farmers because of volume requirement and high storage cost. This justifies the financial and technical practicality of non-ref storage for smallholder farmers due to simplicity of this low cost technology and the relatively smaller volume of harvest.

RESOUNDING JOY OF USING THE ATS TECHNOLOGY

By Vladimir B. Caliguiran

COVER STORY

Resounding laughter filled the room when they shared their stories. They were happy recalling their ups and downs in vegetable gardening. Most of them, started gardening from a small parcel of inheritance. But now, the members of the Taloy Sur- Bawek Farmers Organization are now producing tons of vegetables for the La Trinidad Trading post.

Chayote (*Sechium edule*) is their major crop. This is complemented with beans, cucumber, bell pepper, tomato, taro, ube and sweet potato. Some farmers also grow coffee and lychee and there are some maintaining fishponds with tilapias and carps. All of these are grown on the highlands of Tuba, Benguet; down the mountainsides of Marcos highway.

"*Dati dalawa lang ang may chayote farm, 'yung iba small garden lang. Kung ano ang kaya mong buhatin, 'yun lang ang tataniman mo* (Before only two farmers have chayote farms, while most of us were only cultivating a small garden. We only plant what we can carry)," says Ignacio Kalinga, the first president of the organization. Ten years ago, according to Ignacio, neither pests nor land fertility was their major farming problem; it was the hauling of their produce from their farms up to the highway. They had to traverse deep ravines, steep slopes, and a river. They walk at least two hours carrying about a hundred kilograms of their harvest. And when times that the buying price was very low they opted not to harvest their produce.

"*Pero dati na yun* (But that was before)," Brian Ducat quickly reacted. Then the group bursts into laughter. He is the newest member of the organization. According to him, he just started cultivating his land this year. "*Narigat idi nu bunagim ti sayote nga isang-at dituy* (It was very laborious to haul your produce up here)," he shared.

"*Ngayong may tramline, mas madali na ang hauling ngayon* (Hauling became easier now that we have the tramline)," he added. And everyone seconded Brian and started to share their stories.

The current president, Roberto Tacay, is a wise man. In one of his farms, he made a manually operated tramline made of rope. "*Nakakita lang ako dito sa Benguet, tapos kinopya ko na* (I copied the principle from the one I saw here in Benguet)," he said. And one night of 2009, while having a conversation with his friend Boy, they realized to ask their Barangay Captain if they can propose for a tramline. "*In-request mi ta marigrigatan kamin. Rab-rabii napan kami kenni Kapitan* (We are experiencing drudgery in hauling our produce thus we when we went to the Captain late at night to ask for such technology)."

Coincidentally, the Department of Agriculture through PHilMech was implementing a nationwide project for the establishment of agricultural tramline system. And at the end of 2010, a bi-cable agricultural tramline was finally granted to them.

The Agricultural Tramline System is an alternative transport system for farmers in areas isolated from road network because of ravines, rivers, and dense vegetation. It is a hauling facility using cables and pulleys to transport agricultural products and inputs from isolated farms to the

nearest roads. It can carry 150 to 500 kilograms of produce.

Farmers are paying Php 120 per round trip of the tramline. To maximize the technology during harvesting, farmers haul farm inputs such as fertilizers and other supplies down to their farms. Their tramline can carry 11 bags of chayote in just 20 minutes.

From two, there are now about 20 farmers growing chayote in their area. Every five days, the group is supplying 100 to 150 bags of 25 kilograms each to at La Trinidad Trading Post.

"*Idi ket nadirdir tay nating mun nu makadanun dituy ngatu* (Before, your produce were bruised when it arrives here [access road])," 78-year old Luis Manis said. This old but strong man serves as the adviser and PRO of the organization. He is growing semi-temperate crops since 1963.

He says, the traders no longer dictate the price of their produce because the quality and freshness of their harvests were preserved through the ATS. "*Isu nga dakkel nga tulung daytoy tramline kadakami* (That is why this tramline is a big help to us)."

In fact, according to Kalinga, the traders and middle men at La Trinidad Trading Post are the ones bidding for their produce.

"*Pero kapag operational na ang Agri Pinoy Trading Post, doon na kami kasi walang middle man. Diretso na sa traders ang produkto namin. Kaya mas aayusin na rin namin ang mga produkto namin. Magsisimula na kaming mag-classify* (But we will move to the AgriPinoy trading post once it is operational because middle man will not be allowed there. We will directly sell our products to traders. Thus, we will also improve our produce through classification)," Ducat added.

"*Naragsak kami nga adda ti maapit mi nga maitid mi ti ubbing nga pang-allowance da ken dituy balay* (We are happy that we have something to harvest and we have something to spend for our children's allowances and household supplies)," Kalinga happily shared.

The organization has also earned extra income through the tramline operation. Aside from the maintenance allowance, money earned was also used to extend the shed of the tramline that serves as a storage facility for their farm inputs. Moreover, farmers can also borrow from the fund for their farming needs. "*Ti maysa pay, adda ti bonding mi nga farmers, weekly adda kami dita tramline. Aggiistruya kami ken pagsasaritaan mi ti ban-banag nga makatulung kadami* (One more thing is that, weekly, when we are here at the tramline, we can have our bonding time; we exchange stories and ideas for our betterment)," said Ducat.

According to the farmers, they are very eager to partner with PHilMech for a new tramline project. "*Nu adda pay kuma ti maysa nga tramline ket naragragsak kami kuma* (If we only have another tramline, we would be happier)," Manis remarked. He is immediately backed by all the members of the association followed by their resounding laughter.

THE MALUNGGAY ADVOCATE, CONSUMER, AND PARTNER

By Mila B. Gonzalez

She is the mother of Drew Arellano, GMA News TV travel host. She is the mother-in-law of Iya Villania, former MYX VJ, actress and wife of Drew. She is the daughter of former Pangasinan Governor and Minister of Department of Agrarian Reform Conrado Estrella Sr.

By association alone, she is already a celebrity. But she is her own woman because through her achievements, she has created her niche in the agriculture industry.

The woman is Mrs. Bernadette E. Arellano, 68 years old from Rosales, Pangasinan. She is a quiet but powerful force in the promotion of malunggay, the wonder tree.

Malunggay and its many wonders

Mrs. Bernie is convinced of the nutritional benefits and healing powers of malunggay. Thus, she wants this vegetable propagated and consumed by people of all ages nationwide.

Malunggay's scientific name is *Moringa oliefera Lam*. Its English name is horse radish. It is abundant in the countryside as a backyard vegetable. It is a popular addition to bread, soup and viands. Filipino recipes like tinolang manok, corn soup with malunggay and malunggay-enriched pandesal all contain the leafy green vegetable.

Malunggay is packed with nutrients like calcium, iron, phosphorus and vitamins especially Vitamins A and C. It has many medicinal uses, with all its plant parts utilized for the purpose.

Young leaves of malunggay are fed to lactating mothers to increase their flow of breast milk. Malunggay fruits and leaves are good for constipation. Malunggay pods are purgative. Seeds are also good for hypertension, gout, asthma. Powdered roots are used for inflammation and swelling.

So many are malunggay's health benefits that Mrs. Bernie consumes five capsules of malunggay every morning, noon and evening, 555, as she calls it.

When she was operated on her pancreas, she recovered so fast to the amazement of her doctor. Mrs. Bernie would like to believe, it is the wonder of malunggay.

The Malunggay Advocacy

Mrs. Bernie founded the Moringaling Philippines Foundation, Inc. (MPFI) in 2009 to "build up a strong, sustainable and globally competitive moringa industry in the Philippines." Members include farmers, processors, exporters, consumers, exporters and health enthusiasts.

Every year, the foundation organizes the Moringa Congress where members meet to share experiences, listen to trends and advances, and network with other participants. Although Mrs. Bernie is no longer the chairperson of the MPFI today, she actively participates in its activities.

She believes that malunggay is key to prevent malnutrition among children and she strongly advocates for its propagation and consumption.

For her part, Mrs. Bernie maintains four malunggay farms—three are in Rosales, Pangasinan and the other in Porac, Pampanga. In Rosales, she has 20 000 malunggay trees planted in her one hectare (ha) farm; 10 000 trees planted in her six-hectare farm in Brgy. Acop. The rest are planted in her 2000 m^2 farm in Brgy. Tumanay, Rosales, Pangasinan and in the 40 m^2 farm in Porac , Pampanga. For every tree, she harvests one kilogram of malunggay leaves.

An organic farmer, she instructs her workers to observe good agricultural practices in her malunggay farms. "There should be no chemicals lying around the farm, even empty bottles. There should be no plastic or other materials…"

She further narrates, "…Our native pigs, chicken, tilapia, we don't feed them inorganic feeds…We feed them with the *darak* coming from our little rice mill, then kangkong for the pigs which just grow wild in my ponds…"

Mrs. Bernie is soon opening her training school for barangay health workers, mothers, and out-of-school youths. The school's soft opening is in September, official launching in October and inauguration in November this year. She also eyes teaching in her school TESDA courses like vermiculture, agri-entrepreneurship which includes malunggay production in the backyard, Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP)and so forth.

"Then we will graduate into a higher level, *kaya may solar dryer na-i-install doon sa farm ko…*" revealed Mrs. Bernie of her plans.

This is Mrs. Bernie's malunggay advocacy and legacy as well. *"Gusto ko pagnawala ako, meron naman akong iiwanan,"* she reflected.

Partnership with PHilMech

Mrs. Bernie is always a willing development partner. When a study by the John Hopkins Hospital was conducted among school children in Luzon, she supplied the malunggay powder added to the pandesal which the school children consumed. Whereas before, children were lethargic, malnourished and always absent in class, with their consumption of pandesal with malunggay, they increased in weight, more active and always present in school.

Her partnership with the Philippine Center for Postharvest Development and Mechanization (PHilMech), a government agency under the Department of Agriculture, is in keeping with the Public-Private Partnership she is espousing.

It started with Dr. Cristina Gragasin's research on "Enhancing the Quality and Safety of Moringa Products". The PHilMech research developed appropriate and improved processing systems for malunggay leaves to produce nutritious and safe dehydrated malunggay products. Mrs. Bernie provided the malunggay leaves for Dr. Cristy's research.

How has PHilMech helped Mrs. Bernie in her malunggay production and business? *"Unang-una, Cristy has always volunteered for the betterment of the foundation. Nandyan siya lagi. Pangalawa, gumawa siya ng study sa aming processing plant…"*

Dr. Cristy Gragasin is an award-winning Supervising Science Research Specialist of the Bio-Processing Engineering Division of PHilMech. It was during her research period on malunggay that Mrs. Bernie met Mrs. Genara Matsuoka, another PHilMech partner in the malunggay research.

continued on page 19

Why Kids Don't Eat Vegetables?

By Elijah Davalos

I asked a five-year old boy why he doesn't like vegetables. He said vegetables are fibrous and hard to swallow, that they have bitter after-taste; that vegetables do not give him a full stomach like meat can.

Besides, meat smells so good that it kicks up his appetite. I said buffalo only eats grass but it is very strong, wouldn't you like to be strong? After considering the question for a while, he replied: "a buffalo is an animal, I'm just a kid, I'll eat happy meal anytime. I like the toy that comes with it too." I'm lost with his argument but kids have weird sense of logic and I left it to that.

Eating habits, like human folly, are the most difficult things to change. It is more culturally-influenced than we realize. Snobbish society associates eating vegetables with poverty because a man with no money simply scours around like a goat to pick edible grasses to survive. A dish and its preparation identifies a person's cultural identity; the elaborately-prepared pancit to a Chinaman's refinements or pinakbet to an Ilokano's cavalier attitude as influenced by the adversities and joys of life.

Eating is also defined by climate and environment. Bisayans consume fish more than vegetables because they are surrounded by abundant marine life. No Bisayan can be more than 50 kilometers away from the sea. The Ilocanos have shorter shoreline and is more land-bound than the Bisayans thus vegetables consumption is bigger in Regions I and II. In the jungles of Ilocandia, vines like *bagbagkung*, *kampilan*, *sabawil*, *samsamping* and *alugbati* grow. On dry riverbeds sprung papaet and on the parched farm comes tabukol. On rivers are *kangkong*, *aba*, *pako* and *baraniw*. *Kalunay* and *saluyot* grew during the onset of the monsoon with the rest of the weeds including bamboo shoots.

There are tree-vegetables such as ***marunggay***, *ba-ig*, *katuday* and banana blossom. From the coastlines came seaweeds; *pukpuklo*, *arusip* and *pansit-pansitan*. From rotting banana trunks and hay grew mushrooms and on dried bamboo, *kudet*. The rest are outright weeds such as *pilpiltung* and *talinum*. These indigenous vegetables while resistant to pests, they are not popular and are even vanishing species.

The vegetables we cultivate commercially are not native to us. Some were brought either by our ancestors during their wanderings or by settlers or traders from nearby countries such as eggplant and bitter gourd from India. Most are brought by the Spaniards not from Spain but from their continental colony of Meso- and South America; tomato, pepper, chayote, lima beans, camote, gourds, beans, squash and jicama (answering the query "*nagiddaam*?"), that is singkamas. It was perhaps through this route that okra and string beans from Africa reached the country; brassicas and crucifers that comprise chopsuey, more so. It's a huge commercial success to produce these vegetables.

Growing horticultural crops demands so much attention and care but in return, vegetables can give you the pleasure of income every other day unlike agronomic crops that only needs casual visits after planting and give a single yield after three months of waiting. The vegetable industry is now dominated by transnational seed companies that promote terminator

seeds to the detriment of our traditional, open-pollinated varieties.

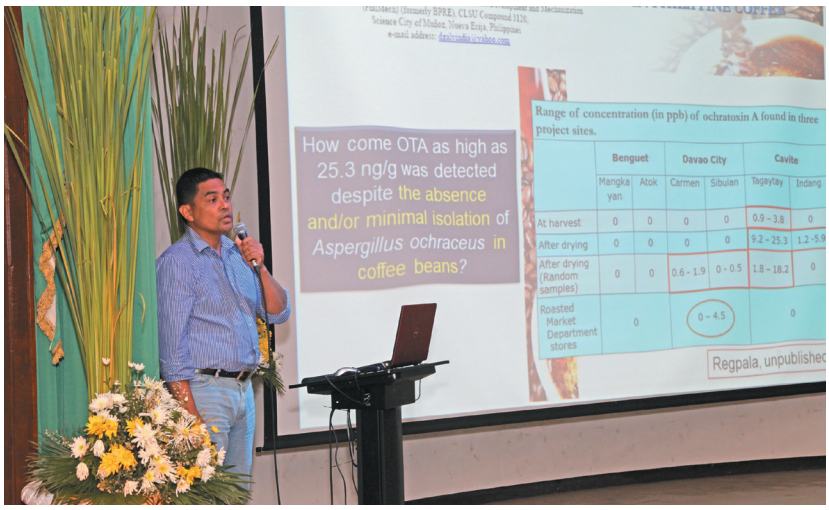
My professor in College Algebra, while teaching quadratic function in obtaining an area beneath a curve, warned that solving an algebraic equation is NOT like cooking pinakbet where all things are dumped together in a pot and left to cook. She said that after "wronging" our test papers. *Pinakbet* is a dish where all the taste the human brain can interpret is mixed into a symphony of heaven and hell; sweet (camote), sour (tomato), bitter (*parya*), salty (salt and *bugguong*) and pungent (ginger and green pepper). *Bulanglang* looks like a variant of *pinakbet* to me but it can hold out its own identity as separate menu.

There are more than a hundred variations of *diningding* in an Ilocano's heirloom of culinary collection. When broiled fish is cooked with vegetables, the dish is called *inabraw*. Marcos is known to prefer diningding especially KBL (*kamatis-bugguong-lasuna*) in-spite of his fabulous wealth. Stomach like brain can be conditioned too. Ramos never eats. He simply chewed on to his tobacco, out of this hardy vegetable-eating race came religious reformers, writers, heroes, generals and presidents of the republic. Out came also a militant labor leader and communist ideologue, too.

Traditionally, a mother's home-cooking is associated with love, care and family devotion. But modern mothers are overly-conscientious in feeding kids. They prepare special food apart from their husbands as if the two are different species of being. Grandmothers are worse. They brought kids to the fast food store. Obesity and early signs of coronary diseases are now detected on children pampered with Western diet. Enzymes and hormones as part of animal feeds are associated with girls ovulating earlier than usual, giving them the fullness of a woman even while still a child. While the Asian diet is considered a healthy diet, we are weaning kids away from it. There is nothing more ironic than to hear kids sing Bahay Kubo of Levi Celerio while craving for Col Sander's fried chicken.

When the Elohim preferred the bloody offering of Abel over the lame fruits and vegetable offering of Cain, does it mean God suddenly had a discriminating taste for a burning animal fat? Or did it signify that animal husbandry is here to supplement the poor protein content of crops that agronomy and horticulture produce? The grandfather of the kid in the beginning of the article told me that when I eat vegetables, I am healing myself too and tending a vegetable patch gives therapeutic benefit from the hustle and bustle of modern day life. God not only created Adam and Eve but also Eden, the owner of the Garden.

Hey kid, eat your vegetable. It won't make you less human.



36th In-house RD&E Review held

The PHilMech has conducted its 36th Agency In-House Research, Development and Extension Review.

This yearly activity is being conducted to evaluate the agency projects as to their achievement of objectives, application of the proper methodology and to determine whether there are issues which should be addressed in order to improve the delivery of results.

The Evaluation and Management Services Section (EMSS) of the Planning, Management and Information Technology Division (PMITD) organized and conducted the In-house RD&E review on May 25 and 26, 2015 at the PHilMech Auditorium, Science City of Munoz, Nueva Ecija.

Of the 13 projects presented, the winning papers were: "Technical and Socioeconomic Evaluation of Non-refrigerated Storage System for Smallholder Onion Farmers" (first place), by Engr. Rodelio G. Idago of the Socio-Economic and Policy Research Division, "Toxigenic Potential of Fungal Species From Coffee Beans in the Philippines" (second place), by Dr. Dionisio G. Alvindia of the Food Protection Division and "Fluidized Bed Drying System for Complete Drying of Paddy Phase II – Development of Fully-automated Pilot-scale System" by Engr. Reagan J. Pontawe of the Agricultural Machinery Division (third place). Plaques and cash awards were given to winning research papers.

For this years' "Early Bird Award," Engr. Reagan J. Pontawe of the Agricultural Machinery Division garnered the award with the paper entitled "Fluidized Bed Drying System for Complete Drying of Paddy Phase II – Development of Fully-automated Pilot-scale System."

Three best posters were adjudged winners from the 12 poster entries. These were "Resistance of Storage Insect Pests to Phosphine" (first place) by Ms. Miriam A. Acda of the Food Protection Division, "Effect of Ethanol Vapor in the Quality of Treated Broccoli" (second place) by Ms. Mia V. dela Cruz of the Food Protection Division and "Utilization of Biodegradable Composites Material in the Production of Fruit Bag" (third place) by Engr. Andres M. Tuates, Jr. of the Bio-Processing Engineering Division.

Serving as members of the Board of Judges were known specialists in their own fields. They were: Dr. Gloria P. Jimenez, Dean, ASDECS (Asian School of Development & Cross Cultural Studies), Quezon City; and Manager of REACH, (Resources Employment & Community Horizons,Inc.), Quezon City who chaired the Board of Judges for Best Paper with Dr. Cesar B. Quicoy, Professor, College of Economics and Management, University of the Philippines at Los Baños (UPLB) and Dr. Elaida R. Fiegalan, University Graduate Program Coordinator, Graduate

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In photos: Cashew processors of La Union participates in the actual processing of cashew nuts and apple.

PHilMech, DMMMSU conduct techno-forum on cashew

The PHilMech and the Don Mariano Marcos Memorial State University (DMMMSU) organize a technology forum for the cashew processors of La Union last May 12 to 13 at the University Bacnotan Campus.

The activity is a sequel of the first techno forum on cashew nut processing held last year. The same 25 participants attended this second techno-forum which focuses on cashew apple processing.

Ms. Elizabeth Paglinawan of Alion Kapit Bisig SEA-K Association of Bataan, one of the successful adopters of cashew processing system of PHilMech, shared their experience to the participants.

Ms. Paglinawan also introduced six cashew apple recipes such as wine, juice, jam, prunes, jelly, and jelly and jam mixture. Each participant received a recipe book from PHilMech.

Dr. Adriano T. Esguerra, DMMMSU vice president for Research and Extension challenged the participants to start the small scale business enterprise on cashew nut and apple processing. He envisions Bacnotan, La Union to be the center of cashew processing business in the northern part of the Philippines.

The forum is part of the "Enhancing the Agricultural Extension Delivery System on Postharvest and Mechanization through the SCUs and the Techno Gabay Program." *IDCDavalos*

the malunggay... *from page 15*

Mrs. Bernie supplied seeds and moringa powder for Mrs. Gena's needs and export business. Meanwhile, Mrs. Gena also supplies processed moringa capsules to Mrs. Bernie for her daily 555 needs.

Bright Prospects for Malunggay

With the increasing cost of medicines, the rise of malunggay as an alternative drug and food supplement is a welcome treat.

Initiatives from the Philippine Congress which are spearheaded by women legislators are paving a bright path for malunggay. In March 2014, Congress passed House Bill 2072 authored by Congresswoman Gina de Venecia of the fourth district of Pangasinan. The bill proposed malunggay as a national vegetable and November as malunggay month. Similarly, Senate Bill 104 (Malunggay Development Act) authored by Senator Loren Legarda has been proposed. The bill is for the allocation of P1 billion for the production, marketing and processing of malunggay. Earlier on, another bill, the SB 2099, or the act establishing the malunggay industry, has been proposed by Senator Cynthia Villar. The bill will help provide a source of employment and livelihood to many Filipinos.

Although Mrs. Bernie is no longer the chair of MPFI, she is a board member of the Philippine Institute for Traditional and Alternative Health Care (PITAHC), an attached government corporation of the Department of Health (DOH). The corporation aims to provide alternative health care to people especially the poor sector.

Mrs. Bernie shared the advocacy efforts of the PITAHC on the inclusion of malunggay in the Bahay Kubo song. This way, the importance of malunggay as a vegetable is emphasized among school children and their parents, she explained.

Yes, bright prospects are in store for. Thanks to strong women advocates, consumers and partners like Mrs. Bernie Estrella Arellano.

PHilMech scientists garner more awards

Recognitions continue to pour on two of the PHilMech scientists – Dr. Dionisio Alvindia and Dr. Alexander Joel Gibe. Aside from being the first two scientists of the agency, institutions and organizations in the academic world also cite their exemplary research achievements.

Dr. Dionisio de Guzman Alvindia, Boyet for short, is the Supervising Science Research Specialist of the Food Protection Division of PHilMech. He has been conferred Scientist III rank by the National Academy of Science and Technology--Department of Science and Technology (NAST-DOST) Scientific Career System.

Recently, he added another feather on his cap – the 2015 PPS G.O. Ocfemia Outstanding Plant Pathology Award in Research. His research undertakings include the development of non-chemical approaches to control postharvest diseases in fruit crops. His notable research contributions in the field of postharvest pathology are his discoveries of the *Bacillus amyloliquefaciens* DGA14 and *Trichoderma harzianum* DGA02 in inhibiting banana crown rot.

Dr. Alexander Joel Gibe, Alex for short, is the chief of the Laboratory Services Division. He has also been conferred Scientist I rank by the NAST-DOST. Early in the year, the Central Luzon State University honored Dr. Alex as one of its Alumni Achievement Awardees.

Dr. Alex significant contributions in research include (1) pesticides in the area of insect resistance development, (2) accumulation of residues in grains and the implication of managing resistant population, (3) development of effective, integrative pest management technologies, and (4) prolonging shelf life and preserving the quality of high value commodities by developing appropriate handling methods.

Both Dr. Boyet and Dr. Alex, aside from being award-winning researchers, are authors/co-authors of a number of national and international publications like refereed/peer reviewed ISI and non- ISI journals. *MBGonzalez*

Dr. Dionisio G. Alvindia

Dr. Alexander Joel Gibe

36th in-house...

from page 18

Program Office, Central Luzon State University (CLSU), Science City of Munoz, Nueva Ecija.

For the Best Posters, Ms. Geraldine V. Sombero, of the National Economic Development Authority (NEDA) Region 3 Professor chaired the Board of Judges. The members were Ms. Geraldine V. Sombero and Engr. Eden C. Gagelonia, Postharvest Technology Head, PhilRice and Engr. Rodolfo F. Fernandez, Engr. III, Bureau of Agricultural Research.

The panel of evaluators included Dr. Jessie C. Elauria and Dr. Delfin C. Suministrado from UPLB; Dr. Maria Excelsis M. Orden, Dr. Renato G. Reyes, Dr. Romeo B. Gavino, Mr. Joel G. Juvinal, M.Sc., Mr. Juvy J. Monserate, M.Sc., Dr. Marilyn G. Patricio and Dr. Ronaldo T. Alberto from CLSU, Mr. Arnel Ramir M. Apaga from Philippine-Sino Center for Agricultural Technologies and Dr. Divina A. Amalin, De La Salle University, TAFT Avenue, Malate, Manila. *VMBarlis*

PSAE elects 2 PHilMech execs as BOT

Engineer Genaro M. Tolentino and Engineer Aldrin Badua were elected as the new president and member, respectively, of the national Board of Trustees (BOT) of the Philippine Society of Agricultural Engineers (PSAE) during its national convention last April 19-25 in General Santos City.

Engr. Tolentino is the chief of the Enterprise Development Division of PHilMech. His division develops policy and investment planning for postharvest and mechanization technologies. His unit also provides coaching and mentoring, and other technical services to new and existing entrepreneurs.

Previously, the new PSAE President held different positions in the organization such as Nueva Ecija chapter president from 1991 to 1995 and Member of the national Board of Trustees from 2012 to 2015.

Engr. Genaro Tolentino

Engr. Aldrin Badua

Engr. Badua, on the other hand, is the head of the Agri-infra Coordinating Unit (AICU) of PHilMech. The AICU is in-charge in the implementation, monitoring and evaluation of infrastructure support and special projects such as the DA- Rice Mechanization Program, Agricultural Tramline Projects, and Postharvest and Mechanization Support to Organic Agriculture. Before elected as BOT member, Engr. Badua was the Public Information Officer of PSAE from 2014-2105. The newly elected Board of Trustees will serve the organization for tenure of one year. The PSAE is the recognized professional organization of more than 7,000 agricultural engineers in the country. It was founded in 1950 to advance the theory and practice of agricultural engineering.

VBCaliguiran

PHilMech, MIAP to develop sugarcane harvester

The PHilMech and the Metalworking Industries Association of the Philippines, Inc (MIAP) are now working to develop a harvester for medium-scale sugarcane farm. In a Memorandum of Agreement signed by the two organizations on June 19, 2015, they are expecting to finish fabricating the prototype unit at the end of 2016.

According to MIAP, most of the mechanical harvesters available in the country are imported and geared for large-scale farms and generally unsuitable for local conditions.

Based on Sugarcane Industry Roadmap (2011-2016) of the Department of Agriculture, 90 percent of the total area of sugarcane farms in the country are small holdings.

The development of a mechanical harvester aims to reduce postharvest losses during the harvesting and enhance farm productivity and efficiency.

The collaborative project is part of the memorandum of understanding on technical cooperation entered by the MIAP and PHilMech. MIAP is a trade association of metalworking firms in the country.

PHilMech technologies awed Dapitanon farmers

PHilMech technologies amazed Dapitanons particularly cassava farmers of Brgy. Aseniero. Last June 15 to 17, PHilMech drew a crowd for its Training Course on Mechanization and Postharvest Technologies, Technology Demonstration of cassava digger and adlai mill, and Technology Forum for local agri-machinery manufacturers. This coincided even with the City's Charter Anniversary and Harvest Festival celebration.

Mayor Rosalinda "Nene" Jalosjos during the technology demonstration in Brgy. Aseniero, Dapitan City gave her thanks and asked that the demonstration unit of cassava digger be given to Dapitan City. This request earned applause from the Aseniero cassava farmers.

"*Salamat kaayo sa atong mga bisita sa pagdala sa modernong teknolohiya para sa atong Dapitanons*... Pasalamat tayo sa Panginoon (Thank you very much to our visitors for bringing modern technologies in our town... Thank God)," Mayor said.

For the mayor, the PHilMech technology would help ease the town's cassava harvesting for their cassava chips processing. In response, PHilMech representative replied that what PHilMech could do was to include Dapitan as a study area for the cassava digger.

"What PHilMech can do is make Brgy. Aseniero of Dapitan City as a project site for the commercialization of the cassava digger. The right ingredients for a good cooperation is here – assistance of LGU, city agriculturist and other government agencies, and receptive farmers... we see no reason to decline the request. For now we can "lend" the unit to the area to gather data," Reynaldo P. Gregorio, acting chief of Agricultural Machinery Division, answered on behalf of PHilMech.

The response of Dapitan to mechanization and postharvest technologies inspired PHilMech team of researchers and extensionists, and Roderic O. Vereña, chief of Technology Management Section of Technology Management and Training Division, summed the feeling with, "*Masarap tulungan yung mga nagtutulungan din. Maganda yung samahan ng LGU, farmers' associations. Buo ang suporta na nakikita namin dito.*" Vereña expressed these sentiments during the closing of the three-day training course.

The catalyst

The "invisible link" that brought PHilMech technologies to Dapitan City is Susan Q. Empeynado, senior agriculturist and cassava consultant of the City Agriculture Office. Empeynado is considered the "maestra" or the teacher by Mayor Jalosjos when it comes to cassava production and processing.

"*Bakit ko binigyan ng importansya ang cassava? Dahil ako po ay kumakain ng cassava. Noong una personal na negosyo ang naiisip ko kung bakit ko sinimulan ang cassava chip processing, pero nang pumasok na ako sa pagiging extensionist gusto ko na marami akong matulungan. Gusto kong makilala ang cassava chips bilang pinaka-champion na produkto ng Dapitan*," beamed Empeynado as she related how she started the

processing of cassava in Dapitan.

Empeynado's idealism also echoed during the closing program of the three-day training course. She said,"*Lahat ng ating natutunan… it serves our purpose*…for every journey we always start with a single step…hindi natin mararating yung ating patutunguhan kung hindi tayo hahakbang."

As a final note she challenged the training participants with "*Dapitanon: kapobrehan tumpagon, kamoteng kahoy itanum* (Dapitanon: fight poverty, plant cassava)."

The movers

PHilMech's TMTD did not stop with the training course, technology demonstration or with the technology forum, it as well encouraged the LGU to sit down and discuss the possible future interventions that PHilMech could offer.

City Councilor Amalou T. Monroyo and City Agriculturist Cyril A. Patangan led the group of the LGU. Monroyo voiced out their interest on getting all the agricultural machinery or technologies that PHilMech could offer. The opportunity she said is for the taking and Dapitan City should be aggressive enough to use the partnership. She encouraged Patangan's group to have technical cooperation with PHilMech on Dapitan's emerging crops such as cassava, coffee and cacao, and on the town's long existing crops like corn, mango, adlai and coconut.

The group of the LGU also supported the idea of local manufacturing of PHilMech technologies. They welcome the idea of collaboration with a state college university or the idea of adding this in the City's empowerment programs for skilled workers.

The PHilMech team also found opportunities with this partnership. Researchers saw a gateway for researchable areas not only in cassava processing but also in terms of machinery for other crops.

The takers say

"Belib kami sa demo… gamiton namo ang cassava digger (We are amazed by the demonstration of the technologies… we will use the cassava digger)."

"*Kaugma gyud* (Consistent)."

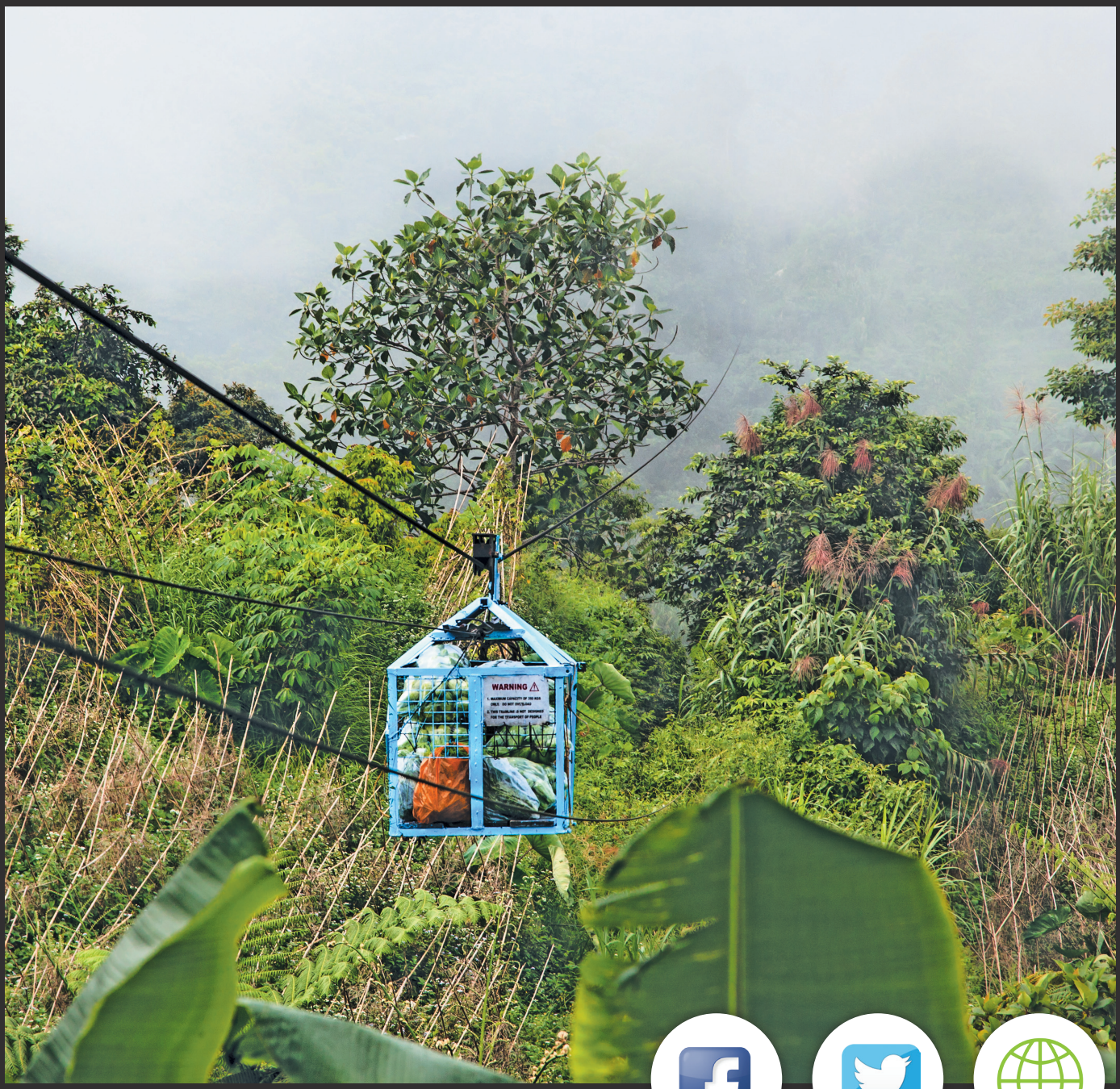
"*Sana matulungan pa kami ng PHilMech para ma-improve pa ang aming pagsasaka* (We hope PHilMech would help improve our farming)."

"*Sana makarating pa sa aming barangay ang iba't ibang makinarya sa pagsasaka* (We hope the different agricultural machinery reach our barangay)."

"Looking forward to see a cassava planter."

These impressions were heard not only during the technology demonstration of the cassava digger and the adlai mill but were also picked up in the closing ceremony of the training course.

Recapping the whole conduct of the activities, Helen R. Calica, Training Section chief of the of TMTD gave an assurance to the takers of the PHilMech technologies, "*Hindi ito ang huli, umpisa palang ito ng ating partnership.*" *BGSMagararu*



Agricultural Tramline System

This technology reduces drudgery in hauling and prodived transport in production areas under extremely difficult conditions.

Photo by Danilo T. Esteves

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