InangLupa

Official Newsletter of the InangLupa Movement Inc.
Vol. 4 No. 9 *September 2015 Issue*

"Nurturing an inclusive, science-based, resilient & market-oriented Philippine agriculture"

Strong El Niño may further strengthen

The ongoing El Niño is comparable or may even surpass the 1997-98 El Niño episode.

This was the forecast made by PAGASA through its acting administrator Dr. Vicente Malano, in a statement issued on September 30, 2015.

"The current El Niño may further strengthen and is likely to persist until the second quarter of 2016. Adverse impacts include below normal rainfall that could lead to dry spell and drought conditions in most parts of the country until the first quarter of 2016," said Malano.

"All concerned agencies and institutions are advised to take precautionary measures to mitigate the potential impacts of the current El Niño. PAGASA will closely monitor these conditions and regular updates and advisories shall be issued as appropriate," he added

DA, DTI: 'No Worries'

Meanwhile, government officials said there is nothing to worry, according to interviews done by CNN Philippines, saying that the El Niño episode has caused the agriculture an initial damage estimated at P3 billion.

CNN said officials have told consumers that they should have nothing to worry about.

For instance, Department of Agriculture Undersecretary for livestock Jose Reaño said there's an abundant supply of poultry and hogs, enough to last until February next year.

"It's the prep that counts most, if you have foreseen it – sa amin we saw it last year, when they told us it will happen this year, kaya nga pati population ng importers fill up punong-puno," he said.

He said early preparations were made to ensure there would not be any price spikes. Even the Department of Trade and Industry said prices of basic goods and commodities would remain stable.

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DA-BSWM trains SWISAs vs El Niño

The Department of Agriculture's Bureau of Soils and Water Management (DA-BSWM) has conducted island-wide consultation and planning workshops to enable farmers mitigate the impacts of the current El Niño phenomenon.

The farmers — belonging to Small-Water Irrigation System Associations (SWISAs) — were trained on alternative measures to mitigate the impact of drought, determine the capability needs of the SWISAs, and how they can actively participate in project implementation.

DA Undersecretary Emerson Palad said that involving SWISAs is vital to prepare the agriculture sector for the adverse impacts of El Niño.

"Irrigation is a key element to agricultural productivity. We need the SWISAs to identify measures on how they can optimize their respective irrigation systems during El Niño so they could sustain farm productivity," Palad said.

BSWM Executive Director Silvino Q. Tejada said that P10 billion will be al-

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Invest more to modernize agri, minimize poverty

The country needs more investments to modernize Philippine agriculture and subsequently eradicate poverty, food insecurity, and environmental degradation.

Thus is the advice of former agriculture secretary William D. Dar, and concurrent President of InangLupa Movement, at a policy symposium, called ***"Towards Zero Poverty: Pursuing Inclusive Development and Shared Prosperity,"*** held on September 23, 2015, at Edsa Shangri-la, Mandaluyong City.

He said majority of the poor are in the rural areas. They are the marginal, landless and subsistence farmers and fisherfolk, comprising 70% or 17.5 million of the country's total poor, estimated at 24 million as of 2012.

The rest or 7.5 million are the 'urban poor' or informal settlers in the country's urban centers. In 2012, a family of five who earned less than P7,900 a month was considered poor.

He said the next administration would need to double or triple the

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Dr. William Dar is shown with Socio-Economic Planning Secretary Arsenio Balisacan and the latter's predecessor former Secretary Cielito Habito at the "Towards Zero Poverty: Pursuing Inclusive Development and Shared Prosperity," symposium, in Shangri-la Hotel, Mandaluyong City.

Strong El Niño… *(from page 1)*

"*Tatlo pinaghahandaan*, supply, price, ensure na adequate inventory." Trade Undersecretary Vic Dimagiba said.

But supermarket owners said otherwise, saying a potential water shortage might force manufacturers to increase prices of their products.

Philippine Amalgamated Supermarkets Association President Steven Cua said almost all processed goods need water.

"*Lahat kailangan ng tubig,* fresh produce… water is essential," Cua explained.

Officials said they would closely monitor price movements and enforce mitigating measures to keep prices and supply stable even amid a dry spell.

Water allocation

Meanwhile, the National Water Resources Board (NWRB) has been implementing lower water allocation for domestic use, and could further lessen the allocation until mid-2016 to cushion the impact of severe El Niño conditions.

From an allocation of 41 cubic meters per second (cms) last August 2015, private water concessionaires are now utilizing 38 cms of raw water from Angat Dam.

NWRB deputy executive director Jorge Estioko said the present water allocation can be followed by another reduction if the forecast does not improve.

"We have prepared this schedule of allocation, but is still subject to modification. We need to manage the water level in Angat Dam so we can sustain adequate water for the public until this El Niño phenomenon ends next year," NWRB executive director Sevillo David Jr. earlier said.

Water allocation for domestic use could be further reduced to 37 cms by October, 36 cms in November, 35 cms in December and January, and 34 cms in February and March, based on the NWRB's indicative water allocation.

Meanwhile, farmlands in Bulacan and Pampanga will not be receiving water allocation for irrigation until May next year.

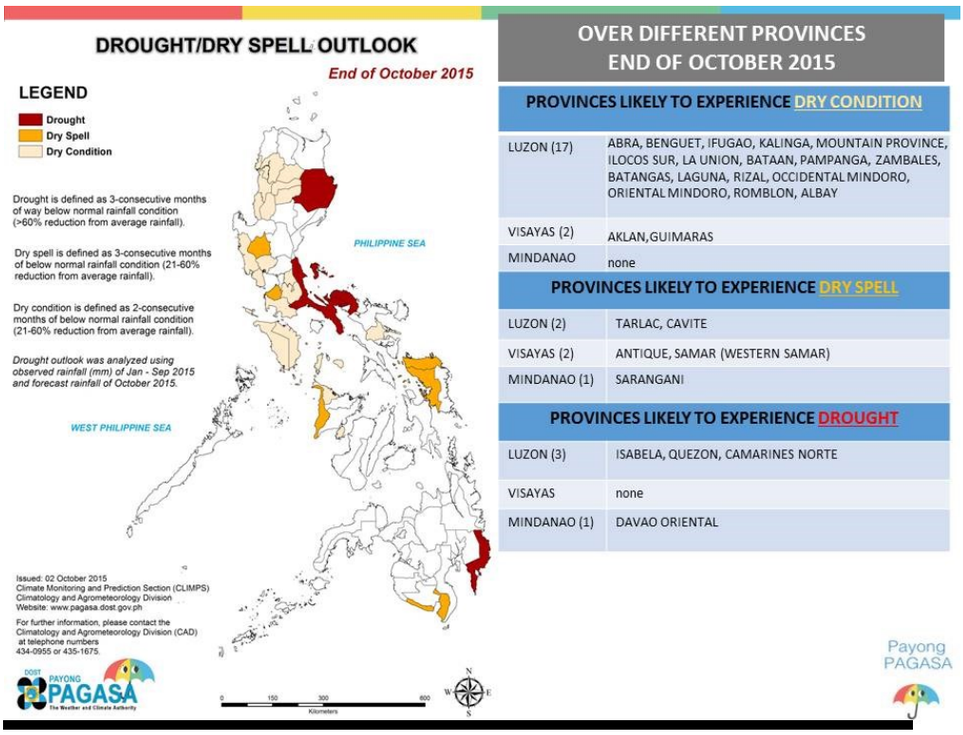
PAGASA hydrologist Elmer Caringal said they expect that Angat Dam would be able to recover this month if Luzon will be visited in October by two to four tropical cyclones.

Drought, dry spell in 19 provinces

PAGASA forecasts *(pictogram at right)* that the provinces of Aurora, Quezon, Camarines Norte and Bohol will likely experience drought, while Isabela, Sorsogon, Eastern Visayas (except Biliran), Zamboanga del Norte, Misamis Occidental, Compostella Valley, South Cotabato, Sarangani, Sultan Kudarat, Agusan del Norte, Surigao del Sur, Basilan, Maguindanao and Sulu and Tawi-tawi will experience dry spell.

Drought is defined as three consecutive months of below normal rainfall (60% less from average) or five consecutive months of below normal rainfall condition (21 to 60% less).

Dry spell is described as three consecutive months of below normal (21 to 60%) rainfall conditions or two consecutive months below normal or more than 60% less from average rainfall conditions. ***(With reports from PAGASA, CCN Philippines, The Philippine Star)***



InangLupa assists Jollibee

The Jollibee Group Foundation, Inc. (JGFI) has recently sought the assistance of the InangLupa Movement in sustaining the productivity of their farmer-partners, particularly those raising calamansi and onions.

JGFI Executive Director Gisele Tiongson and her team (top photo) met with InangLupa President Dr. William Dar (top, right), and discussed the current problems faced by their farmer-partners under their Corporate Social Responsibility (CSR) Program, in several farms nationwide.

Tiongson said the farmers' calamansi and onion crops have encountered pest infestations, thus affecting their production and supply to Jollibee outlets.

She sought the help of InangLupa to complement their ongoing efforts to help farmers rise above their current problems. These include networking and accessing the JGFI with institutional and individual technical experts that could help address the pest infestations, and subsequently maintain the production and incomes of their farmer-partners, and sustain the supply of needed farm products to JGFI branches.

"There seems to be very fragmented effort on agriculture. A science-based treatment to crops seems very hard to find in the country. We already went to state universities as well and it was also difficult to find a solution on this issue" said Tiongson.

Dr. Dar has committed to help JGFI and uplift the economic condition of their farmer-partners by providing linking them with technical experts.

He said InangLupa will continue to provide JGFI and other interested private enterprises and farmers' groups with science-based solutions to sustain the productivity of quality crops and ensure steady source of income by small farmers, as well as agribusiness entrepreneurs, and the farming community ,in general. ***(By VGPerez / JFSurara, InangLupa)***

Dr. William Dar (5th from left), InangLupa President and strategic adviser for Global Expansion of Prasad Seeds, is shown with farmer-leaders of Barangay Don Montano, Umingan, Pangasinan and Mr Karamunchi Prasad (6th from left). The farmers through ALBACOPA will partner with Prasad Seeds in hybrid corn seed production. With them are Ashok Jha Kumar and Kanagiri Sathyanarayana Prasad.

InangLupa President Dr. William Dar receives a certificate of appreciation from PhilAAST President Dr. Boy Dela Peña (right), in the presence of PCAARRD Executive Director Dr. Rey Ebora, at DLSU, Manila.

Dar tells researchers create more pro-poor agri R&D

Promote pro-poor agricultural growth.

Find solutions to further increase productivity in crop, livestock, fisheries and agro-forestry sectors.

Develop new technologies that will raise yields in low-potential areas.

Create opportunities for diversification in agricultural value chains.

These were the challenges posed by former agriculture secretary Dr. William D. Dar to fellow researchers, in the field of agriculture, and fisheries to enable poor farmers and fisherfolk improve their conditions and rise above poverty, during the 64th annual convention of the Philippine Association for the Advancement of Science and Technology (PhilAAST), held September 10, 2015, at the De La Salle University, Taft Avenue, Manila.

He said Filipino S&T researchers and experts play a major role and contribution in addressing national challenges as abject poverty, population explosion, food shortage and malnutrition, biodiversity loss, land degradation, adverse effects of climate change, and water scarcity, among others.

To promote pro-poor agricultural growth, he said the government in partnership with the private sectors and professional groups like the PhilAAST should converge and unite to pursue the following imperatives, namely:

- Pour more investments in R&D, rural infrastructure, information monitoring and sharing
- Empower small farmers' and fishers' groups
- Pursue institutional development and innovations
- Reduce extreme market volatility
- Implement needed regulatory reforms
- Expand social protection and child nutrition action
- Increase public investments in health, education, and mass housing, good governance

To overcome the challenges that impede the growth of the country's agriculture and fishery industry, concerned sectors should pursued the following strategies:

- Set up novel platforms, research laboratories, and facilities for cost-effective technology development and diffusion
- Set up innovative institutional arrangements
- Partnerships, knowledge sharing mechanisms
- Inclusive market-oriented development

For their part, agriculture researchers should narrow the yield gap between research trials and actual field situations, as farmers' harvests are lower by two-fold to five-fold than achievable yields.

They should also tap and harness the large potential of rainfed agriculture.

He said it is unfortunate that there is still no research body devoted to rainfed agriculture and biofuel crops, whereas the Philippines has several research institutes under the DA, DOST, and SUCs that limit their researches on rice, corn, vegetables, fruits and legumes.

He added that government should push for more public-private partnerships (PPP) with regard to R&D and agri infrastructure projects.

"Through the PPP, we could build on complementarities, including upscaling, and develop more commercial technologies for the benefit of all, especially the poor; facilitate innovation, add value, do more creative packaging; and by sharing resources and risks, both the government and the private sector greatly reduce public capital investment," said Dr. Dar.

He added that the DA should also focus on human resource development, and create congenial environment to encourage more R&D outputs via infrastructure (laboratories equipment, etc.) and incentives (salaries, rewards or bonuses).

During the convention, he took the opportunity to advocate the four pillars and development goals of InangLupa and a "new Philippine agriculture."

Finally, he rallied his fellow researchers, saying: "We can do it!"

"Filipinos are a dynamic people. A little entrepreneurial spirit will go a long way.

"Let us turn fiercely competitive. The time to act is now," he concluded

For their notable contributions and

DOST, PhilAAST honor best researchers

accomplishments in the field of science and technology (S&T), five researchers were honored by the Philippine Association for the Advancement of Science and Technology (PhilAAST), during their 64th annual convention. They were:

Dr. Grecebio Jonathan D. Alejandro was conferred the *Gregorio Y. Zara Award for Basic Research* for his pioneering research on Plant Molecular Phylogenetics in the Philippines and the discovery of novel genera and several new endemic species in Rubiaceae (coffee family) such as the Mussaendaustii in honor of UST (University of Santo Tomas). He is a full professor at the UST College of Science and current director of the Office of Graduate Research of the UST Graduate School.

The *Gregorio Y. Zara Award for Applied Research* was bestowed on **Dr. Claro N. Mingala** for his veterinary research on infectious diseases of water buffaloes (carabaos). He is a scientist at the DA-Philippine Carabao Center, in Science City of Muñoz, Nueva Ecija.

Named after one of the country's national scientists who made major advances in aeronautics, engineering and inventions, the *Gregorio Y. Zara awards for Basic Science Research and*

(Pls turn to p4)

Shown above are the country's top five PhilAAST researchers.

DA-BSWM trains … *(from page 1)*

lotted to the bureau for small-scale irrigation projects to be implemented from the last quarter of 2015 to 2016.

"With the funding, we can now further improve our irrigation systems, enabling us to produce commodities competitive with products in the international market," Tejada said.

To date, the DA-BSWM has accredited 1,488 SWISAs with a total membership of 70,000 farmers.

Workshop resource persons included experts from the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) who shared with participants the monthly drought outlook in their respective provinces.

PAGASA said that 60 provinces will experience drought and dry spell conditions in the coming months up to the first semester in 2016, as rainfall will be below normal.

The series of consultations were held in Pampanga for the Luzon cluster, Iloilo City for the Visayas cluster, and Cagayan de Oro for the Mindanao cluster.

A national convention of SWISA members will be held in Davao City this October to further discuss major concerns and challenges, including El Niño mitigation efforts. ***(Loraine Cecillo, DA-BSWM)***

DOST, PhilAAST … *(from page 3)*

for Applied Science Research were established by the Zara Family and PhilAAST in 1968.

The three other awardees were:

Dr. Ramon B. Gustilo, awardee of the *Dr. Paulo C. Campos Award for Health*, is one of the world's leading experts in orthopedic surgery. He has developed an internationally recognized classification of open fractures known as Gustilo Classification of Open Fractures, which is now being used by orthopedic surgeons worldwide in the management of open fractures.

Dr. Nelly S. Aggangan, awardee of the *Leads Agri Award for Agricultural Sciences*, was cited for her exemplary work in agriculture and forestry, particularly in the improvement of "Mykovam," a soil-based biological fertilizer, as a commercial product efficient in replacing chemical fertilizers for agricultural and forest crops.

Dr. Joel Joseph S. Marciano Jr. received the *David M. Consunji Award* for his outstanding contributions as an engineering researcher. He is a professor of Electrical and Electronics Engineering at the Electrical and Electronics Institute of the University of the Philippines, Diliman. He is currently the interim director of the Institute for Information Infrastructure Development of the Philippine – California Advance Research Institutes (PCARI), a program of the Commission on Higher Education.

Each received a cash gift of P50,000 from PhilAAST, which was established in 1951. ***(By Ma. Lotuslei P. Dimagiba, S&T Media Service, DOST-STII)***

Agriculturists to convene Nov 3-6

The Philippine Association of Agriculturists (PAA) will hold its 3rd National Congress, at the Holy Angel University (HAU), in Angeles City, Pampanga, on November 3-6, 2015, with the *theme **'Defining Strategic Actions to Address Emerging Issues in Philippine Agriculture.'***

The Congress— organized by the PAA, HAU and the Pampanga State University for Agriculture (PSAU) — will serve as a venue for discussion and productive exchange of new ideas and deliverable strategies to inform and raise the competence of current and future licensed agriculturists to better serve farmers.

Plenary speakers will highlight the status and challenges of Philippine agriculture in line with the development goals set by the United Nations Millennium Summit and ASEAN.

They will present papers on: Food security and poverty reduction; Climate change and environmental sustainability; and Competitiveness in the ASEAN Economic Community.

The Congress will highlight the launch of the first PAA Regional Chapter in Central Luzon. It is a way by which PAA can contribute in improving the of performance in the Licensure Examination for Agriculture.

Expected to attend are 1,000 licensed agriculturists, agriculture professionals and providers, and officers of the PAA's seven member-organizations.

They are: Crop Science Society of the Phils. Inc. (CSSP), Pest Management Council of the Phils., (PMCP), Phil. Agricultural Economics and Development Association, Inc. (PAEDA), Phil. Extension and Advisory Services Network, Inc. (PhilEASNet), Phil. Society of Animal Science, Inc. (PSAS), Phil. Society of Soil Science and Technology, Inc. (PSSST), and the Int'l. Society for Southeast Asian Agricultural Sciences (ISSAAS). ***(http://www.paa.org.ph/)***

Make the most of limited water

We as humans can survive on a few sips of water a day, but the 'water we eat' daily through the food we consume is much more: just think of 15.000 liters needed to produce one kilo of meat.

This is why, with a growing population increasingly changing its diet towards 'water-hungry' products, all efforts must be made to improve the way we use water in agriculture to make the best out of the limited water resources.

Consider these:

Two liters of water are often sufficient for daily drinking purposes, but it takes about 3,000 liters to produce the daily food needs of a person.

Globally, groundwater provides around 50% of all drinking water and 43% of all agricultural irrigation.

Irrigated agriculture accounts for 20% of the total cultivated land but contributes 40% of the total food produced worldwide.

FAO estimates that irrigated land in developing countries will increase by 34% by 2030, but the amount of water used by agriculture will increase by only 14%, thanks to improved irrigation management and practices. ***(FAO)***

Calling for climate … (from page 6)

ture who understands that with El Niño, we need all the water we can save. And all the science we can apply for climate change agriculture.

The fact remains that our major worry is the millions of farm families who live from loan to loan, who survive from harvest to harvest, who are eternal victims of unscrupulous merchants and moneylenders. So the new Secretary of Agriculture has the job cut out for *him* (a male, yes):

Vision: Emancipate Filipino farmers from poverty!

Mission: Make a businessman out of every Filipino farmer, preferably the wife.

Dr. William Dar (left) shares a light moment with former Senator Joey Lina, Senator Grace Poe, and former executive secretary Ruben Torres in a meeting of the Katipunan ng mga Manggagawa at Magsasaka, at Club Filipino, in San Juan City.

Invest more … *(from page 1)*

budget for the agriculture sector if it is serious in modernizing agriculture and solving poverty in the countryside.

The 2015 budget of the Department of Agriculture is P85 billion, which represents 6.7% of the P1.26 trillion contribution of the agriculture sector in the country's total gross domestic product in 2014, worth P12.6 trillion.

15-point Agri Agenda

In his presentation, Dr. Dar suggested a 15-point agenda to eradicate poverty in agriculture:

- Make agriculture a profitable and competitive sector;
- Bring more private sector investment in agriculture;
- Link agriculture with manufacturing (value-adding, processing) and trade (exports);
- Government must provide a nurturing enterprise/business environment;
- Craft agenda that combines food and nutrition security, economic security and environmental sustainability;
- Strengthen public extension service;
- Make social protection complementary to agricultural growth;
- Utilize science and technology to bridge agricultural gaps;
- Need for a world-class and well-compensated agricultural research system;
- Invest more in R&D for high-value commodities including product development;
- Improve poor people's access to land and water;
- Craft watershed management – water supply framework (supply chain of water from source to sea);
- Provide irrigation service to high value crops other than rice;
- Develop tree crops and aquaculture sectors; and
- Encourage the youth to take agricultural courses to strengthen the country's agricultural workforce. He also advocated the four pillars of a "new Philippine agriculture," namely: inclusive, science-based, resilient and market-oriented. Subsequently, these pillars will serve as major guideposts to pursue four major development goals, which include:
  - Food Sufficiency. The country should be sufficient in rice, corn, vegetables, meat and fish; and pursue diversification into high-value commodities;
  - Nutritional Sufficiency. Sufficiency in crops and other commodities should also meet the nutritional demands of the people following a balanced diet framework;
  - Economic Security. Farmers and fisherfolk should transform from primary production into enterprise development including value addition; and
  - Environmental Security. Government should lead in conservation and sustainable management of natural resources, including coping with climate change.

In all, he said the "new Philippine agriculture" should be productive, profitable, competitive and sustainable.

Zero Poverty Symposium

The policy symposium was jointly conducted by the AIM Rizalino S. Navarro Policy Center for Competitiveness, National Economic Development Authority (NEDA) and United Nations Development Program (UNDP). The "Towards Zero Poverty Project" aims to craft a sustained and accelerated poverty reduction strategy for the Philippines.

NEDA Director-General and Economic Planning Secretary Arsenio Balisacan delivered the welcome address, citing the major challenges in promoting inclusive growth in the country.

Among the presenters were:

Former NEDA chief and Economic Planning Secretary Dr. Cielito Habito, who cited the country's progress in addressing poverty;

Dean Dennis Mapa, UP School of Statistics, discussed the relationship between food inflation and employment with hunger incidence;

Dr. Bruce Tolentino, International Rice Research Institute, focused on the constraints to sustainable agricultural rice production in the Philippines;

Dr. Roehlano Briones, Philippine Institute for Development Studies, laid out possible reforms in the rice sector;

Trade Assistant Secretary Rafaelita Aldaba, talked about job creation and poverty reduction through the New Industrial Policy;

Senator Paolo "Bam" Benigno Aquino IV spoke on how good governance can be utilized to promote inclusive growth;

Social Welfare and Development Undersecretary Angelita Gregorio-Medel underscored how *Pantawid Pamilyang Pilipino Program* and sustainable livelihood programs advance inclusive development and growth;

Peter Perfecto, Makati Business Club, tackled how the business community can create impact on the policy discussions of poverty; and

Ola Almgren, United Nations Resident Coordinator in the Philippines, talked on poverty alleviation as it is interconnected with achieving all the other sustainable development goals.

The policy symposium was attended by hundreds of participants from the private sector, government, civil society and academe, engaging them for more informed analysis on poverty issues, and the Philippine economy. ***(By Noel O. Reyes, with reports from AIM Rizalino S. Navarro Policy Center for Competitiveness)***

Dr. William Dar is joined by former President and Manila City Mayor Joseph Estrada, after he was sworn in as a member of the Board of Regents of Universidad de Manila. With them is InangLupa vice-president Vicente 'Sonny' Domingo.

Fertilize soils by planting legumes

A cheap and organic way to fertilize crops is by planting legumes, as they can 'fix' or convert nitrogen gas from the air into 'usable' form in their roots.

With such practice, consumption of inorganic nitrogen fertilizers could be reduced by almost 40%, according to the United Nations' Food and Agriculture Organization (FAO).

FAO said biologically-fixed nitrogen (BFN) is an alternative source of inorganic nitrogen fertilizer.

The legumes commonly planted in the country are peanut, cowpea *(kadyos),* chick pea or garbanzos and soybeans

FAO said major grain legumes are estimated to 'fix' approximately 11.1 million metric tons (MMT) of nitrogen (N) per annum from the atmosphere in developing countries, as measured by stable isotope methodologies.

Such volume of fixed nitrogen would save US$7 billion, FAO said.

Since 1975 FAO has implemented research programs and technical cooperation projects in member-states that have contributed to the enhancement of BNF in developing countries.

For instance, in Brazil some 35 million metric tons of soybean are produced annually using cultivars, which have been bred for nitrogen fixation supportive traits. The soybeans do not respond to N fertilizer and are self-sufficient in N, with N fixation conservatively estimated at 100 kg N/ha. the FAO said.

Calling for climate change agriculture!

By Frank A Hilario

Editor's Note: This is an excerpt of a blog of ***Frank Hilario,*** who *is currently an executive editor, at Lumos Publishing House. He served as a training specialist, at UMIC International Inc; former consultant on creative writing at the Int'l. Crops Research Institute for the Semi-Arid Tropics (ICRISAT); and former chief information officer, at the Phil. Forest Research Institute (FORI), UPLB.*

El Niño is here and now and I don't feel a dry rumble at the Department of Agriculture, in Quezon City.

The DA doesn't think it needs an emergency plan of action? It only means some people are minding more their positions, and less their agriculture.

Outside, they have been very busy coming up with and implementing many programs and projects in national agriculture, but there is no single Vision and no single Mission, so we don't know where we're going and how to get there really.

With El Niño, we need a new agriculture, which I call *Climate Change Agriculture*. Who are the most vulnerable and most numerous in agriculture? The poor farmers.

So, to carry out this new agriculture, we need a brand new Secretary of Agriculture, who knows poverty and who is completely armed with the science of agriculture discoveries in the last 15 years, including climate change. And who has proven leadership here and abroad for many years.

We need a new Secretary of Agriculture who knows what aggie discoveries? I will give you 5 of the biggest I know from my own research of the last 10 years as a one-man science journalist (visit my *A Magazine Called Love,* blogspot.comif you want to read any of my 2020 long essays):

(1) Woman As The Better Farmer

Philippine agriculture needs an overhaul; the male farmers have failed us too long. The males can learn from the women farmers of Kenya such as **Jane Mulinge**; the MS Swaminathan Foundation is now empowering women farmers to grow the hybrid pigeon pea and produce seeds so that small farmers can afford them. Even the Bill & Melinda Gates Foundation has seen the need for women to participate in managing land and water in their villages. And ICRISAT has found that "Unlike the men, the women think of their family first." The Institute has also found that the women are better in managing technical information than men.

Here was an ultimate test for women farmers. In June 2006, with ICRISAT-AVRDC sponsorship, a group of 120 landless women in the Dosso Region of the Niger started growing hardy indigenous vegetables on 7 hectares of degraded, abandoned sites. They used ICRISAT's Bioreclamation of Degraded Lands System. Some 3 years later, 70 hectares of vegetable plots have been rehabilitated, under cultivation; the expansion of the area continues. There is now lush greenery. Out there, the female is the deadlier of the species!

(2) Ilocano Fertilization

If you apply very much less fertilizer, you will need very much less irrigation water. Did you know that a hill of a crop needs only a pinch of fertilizer? That's one of the findings of farmers in Africa under research with ICRISAT, which calls the technique *microdosing* – I'll call it here *Ilocano fertilization*, to emphasize the thrift. A tiny dose of fertilizer is applied on the seed, not the soil, and then you sow. It's actually a 3-finger pinch (about 2 gm). ICRISAT has found that this saves 67% of the fertilizer while it increases yield up to 120%. In the Philippines, I estimate that Ilocano fertilization will save 9 million bags out of 10 million usually applied; at P1,000/bag, that's P9 billion (US $2 billion) savings enjoyed every cropping season; at 2 croppings a year, that's $4 billion additional income from Ilocano fertilization.

(3) Watershed-Building

A village in India was selected as a project area by ICRISAT and partners precisely because:

"… It had all the negatives: lack of rains, frequent droughts, low harvests, infertile soils, no irrigation, no villagers conserving water on their farms, little incomes. If they could make a difference here, they could make a difference anywhere."

They did. The partners built a watershed where none stood before; then out of that watershed, they built a village; and out of that village, they built hope. Like Adarsha farmers' incomes doubled in 3 years, and these were about twice as large as farmers' incomes outside the watershed.

We need to rebuild the watersheds on those Ilocos mountains, for instance. And we can do it using the Adarsha template.

(4) Climate-Resilient Crops

The most outstanding, and awesome, climate-adaptable single crop is IRRI's Super Green Rice. SGR is actually several varieties: one for drought, one for flooded areas, one for infertile soils, one for saline soils, one that will fight pests, one that will fight diseases... And produce high yields all the time. And it's non-GMO! (If this is all unbelievable to you, visit irri.org anytime.)

(5) Partnership for Agriculture

ICRISAT has discovered the value of partnership in implementing programs and projects for poor farmers of Africa and Asia. The partners come from Government, Science, Business, Industry, Philanthropy, and the Peasantry. (I have since added the Church, to insure all dealings are clean and honest. See for instance my essay "IMODest Proposal: A Coop Revolution for millions of poor farmers," 28 September 2013, *A Magazine Called Love,* blogspot.com). I see cooperatives as the national mechanism by which Climate Change Agriculture can be implemented nationwide simultaneously. We will have to revise the composition of the Board of Directors of each cooperative that will implement Climate Change Agriculture. With proper participating partners, arrangements for loans, production and marketing can easily be arranged, for the ultimate advantage of the poor farmers. What is yet to be seen as beneficial is how social media can be a partner in research and development. The regional agricultural universities should also participate in this new partnership for agriculture.

I repeat: I believe we need a new Secretary of Agriculture who knows all that.

Not only are we *not* applying the 5 sets of knowledge that I discussed above, we are also *ignoring* the fact that in La Union and Pangasinan, for instance, there is a widespread use of shallow tube wells, because the cost is heavily subsidized by the government. We are *ignoring* the over-irrigating STW farmers; they are wasting so much water! We are *ignoring* the social cost of STWs, which is depleting the underground water reserve without restrictions.

The counter-move? The new Secretary of Agriculture should be familiar with and introduce *Slow-Drip Irrigation*, which was invented by ICRISAT in Africa as the African Market Garden because it was meant to help the farmer's wife take care of the family's garden of fruits and vegetables. It has been so successful now it's called a more descriptive name: slow-drip irrigation.

Slow-drip irrigation is the intelligent replacement of the shallow tube well if we want to conserve water and yet produce much more from our farms. There is even now a drip irrigation kit developed by the Int'l. Development Enterprises (IDE), with models for 20 sqm, 100 sqm, 200 sqm and 500 sqm.

We need a new Secretary of Agricul—

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