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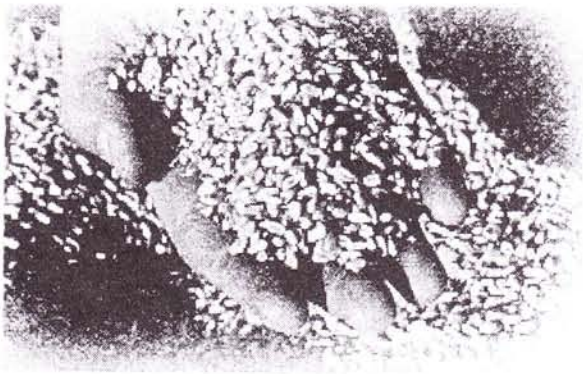
*End hunger and maintain peace*

# Poverty is everyone's concern



The 15 World Food Prize Laureates emphasized the importance of supporting international research centers and public agricultural research programs, which during the past four decades have been responsible for preventing poverty in many regions. They expressed concern that the capabilities of these research centers are being held back due to insufficient funding. Continued support to these centers will allow technological transfer and utilization that will benefit developing countries.

The Laureates issued this call during the World Food Summit: Five Years Later in Rome this June 2002.

The number of undernourished people is falling only by eight million a year, 12 million short of the targeted 20 million per year by the World Food Summit. It is against this backdrop that the 15 World Food Prize Laureates have called on world leaders to put more effort in ending hunger.

The Laureates reiterated that in the 1996 World Food Summit, world leaders pledged their commitment to eradicate hunger in all countries, specifically by reducing the number of undernourished people by half not later than 2015.

While admitting that China succeeded in reducing the number of undernourished people in the 1990s, the Laureates emphasized that developing countries, as a whole, actually saw an increase in that number. This is further aggravated by the fact that of the 90 million children born each year, 70 percent are born to poor and undernourished families.

Locally, poverty is affecting 87.5% of the population or some 13.4 million Filipino families. According to IBON Foundation, an independent research think tank, the country's poverty problem is deep-rooted and widespread, due to "chronic economic underdevelopment." "This underdevelopment is characterized by extreme wealth and income inequality, lack of real economic growth, declining productivity, and inadequate provision of social services," IBON stated.

***End hunger, maintain peace***

The Laureates recognized that the root of hunger is difficult and complex. However, some of the most obvious causes worldwide are low food production and distribution, sustainability, and environmental degradation. The best way to confront and eventually solve these problems is through international cooperation.

"The world as a whole cannot enjoy durable peace, social stability, and economic prosperity while hundreds of millions of people suffer from abject poverty and hunger," they said. This is why they believed that poverty should be a major concern for everyone. According to them, food is one of the most vital human needs and its lack hinders the attainment of other human rights, and is one of the leading causes of social instability and conflict. It is important, therefore, that concrete steps

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## SSAC reviews proposals; sets example

The Senior Scientists Advisory Committee (SSAC) came to review R&D program proposals but it did more.

The time set for the review was 9:00 A.M. but except for one member who came later, they were all there before the time and immediately began working. For those who are used to bureaucratic work ethics, this was unusual especially when one knows who these luminaries in science are. They became role models to the younger scientists and all those who were present during the review process.

The ultimate aim of R&D in agriculture is productivity but there will always be some differences in the results, so the return on investment could be a factor in deciding what studies to finance, they all agreed. And we should know enough of agriculture science to be able to make sound decisions and craft good policies, BAR Director Eliseo R. Ponce added referring to decrease in area and productivity for some crops.

The areas under which the program proposals were presented and

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SCIENCESCOPING

# Conserving the wealth of our seas

*If a flower garden can be so beautiful with its vibrant colors, then, too, is the coral reef with its motley colors, rocks, and the incredible diversity of life in it.*

*But within 20 to 50 years from now, all these will be but a memory. All coral reefs around the world are fast dying and disappearing. The reefs are under assault, says Klaus Toepfer, executive director of the United Nations Environment Program and the World Conservation and Monitoring Centre (UNEP-WCMC). A dozen scientists from Harvard University, UK's York University, Australia Institute of Marine Sciences, Ocean Voice International of Canada, Eastern Ontario Biodiversity Museum, the Center for Applied Diversity Science and the UNEP-WCMC identified 10 coral reefs 'hot spots' ranked by degree of threat and the Philippines is No. 1. Conservation International defines a 'hot spot' as an area facing a significant threat of habitat loss while harboring diverse species found nowhere else. This report came out in the February 15, 2002 issue of Science magazine.*

*What are destroying our coral reefs and marine environment? The International Marine Alliance identified destructive fishing practices as number one. These are dynamite fishing, **muro ami** and cyanide fishing. In an attempt to catch more fish, the fishermen use dynamite not knowing that they are killing the small fishes and other marine life. The same is true with the **muro ami**. The good thing about the film with the same title that starred Cesar Montano is the awakening of the Filipino's consciousness to our natural heritage that should be conserved for posterity. If we want our children and children's children to also taste and savor the fishes, shellfoods, crustaceans and all edible food from our seas, then something must be done. However, resorting to the methods identified as destroying our sea resources is a complex problem. The fishermen and the communities do them because of the need to survive. There is over population, poverty, lack of other sources of income or economic alternatives that have to be solved. The people need education to understand the workings of nature.*

*The poor fishermen are not the only ones to blame for cyanide fishing. Cyanide, a highly toxic chemical, is used to catch live fish for the aquarium industry. Cyanide tablets are crushed and placed into plastic squirt bottles filled with sea water. The diver sprays the solution on the coral reef making the fish stunned and disoriented, thus making them easier to catch. If they flee into the reef's crevices, the fishermen pry or hammer the reefs. The worst thing is, reports IMA, the cyanide also kills all the living things in the reef. The fish can metabolize the poison and can be excreted from their system so they survive but not the reefs. If only the aquarium aficionados know the process of catching the fish that adorn their living room and patriotic enough not to allow the destruction of their sea resources, then maybe they will forego their interest in those lively and beautiful fishes that can only be caught in tropical countries like the Philippines. Our country and Indonesia were traditionally the sources of the tropical aquarium industry but due to species depletion the industry has shifted to the Pacific Islands but the damage is done. According to marine scientists, it takes 100 years to regenerate our coral reefs.*

*Of course, there are other ways that destroy our marine resources such as industrialization, sediment runoff from landbased construction and deforestation, pollutants such as sewage, and oil and temperature change. Because of global warming the marine scientists say that sea temperature is now higher than normal. The Science magazine reports that when corals are stressed by high temperature, the algae that live within them are expelled from the reefs resulting in bleaching. It is this algae that give the coral its color, so when they are gone, the reefs appear white.*

*This is the grim picture that should awaken everybody especially resource managers and government officials to effectively manage our resources. But it is not late. According to Professor David Bellamy, president, Coral Cay Conservation, who spoke of the Mabini-Tingloy Marine Biodiversity Conservation Project, there are now actions taken to stop the further destruction of the coral reefs. We got to rebuild depleted stocks, identify and enforce sustainable harvesting methods, and political will to enforce policies premised on sustainable resources, viable economic activities and social equity. The project of then DENR Secretary Angel Alcala at Apo Island is well cited for effectively engaging a small community to police its own people in managing its marine resources. At first, the community felt that having the coral reefs reserve would be a loss in their livelihood but later on observed that instead of decreasing, their income increased because there were bigger and more fish to catch. Project such as this needs a local level of understanding and support and this can be provided by education and training. In Canada, they have a fish harvesters (they call their fishermen this term) organization council to ensure that fish harvesters have appropriate knowledge, skill, and commitment to meet the human*

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# NPD has a new head

Last June 15, Dr. Eliseo R. Ponce appointed Dr. Juanito B. Sangalang as the new chief of the National Programs Division (NPD) of the Bureau. Says the Director, " with his experiences and training, he is the best qualified person for the job."

Dr. Sangalang is an Associate Professor at the Department of Horticulture, College of Agriculture-University of the Philippines at Los Banos. He was detailed at the Bureau of Agricultural Research on 1 October 2001 and served as the acting chief of the Public and International Relations Division until February 2002. From then, he was appointed as the Assistant to the Director for Programs, and concurrently as acting head of the Governance and Impact Evaluation and Policy Division before the acting head of the National Programs Division of the Bureau in June 17, 2002.

Asked about his view on these developments, he quips that it means he has to work harder. Dr. Ponce was right about the depth and breadth of his experiences as a researcher and research manager. While teaching and doing researches, he held managerial positions in several units and programs of the university-- research and extension coordinator, UPLB Land Grants administrator, Farming Systems and Soil Resources Institute deputy director, and Department of Horticulture chairman.

At present, he also serves as the Commodity Team Leader of the Industrial Crops Team of the Philippine Council for Agriculture and Natural Resources Research and Development (PCARRD).

"My experiences managing these programs are now helping me a lot to oversee the national programs for agricultural research and development," disclosed Dr. Sangalang.

Indeed, as the division chief, he will oversee the review and consolidation of the research plans and programs of the National Research and Development System for Agriculture and Fisheries into an integrated agenda. The formulation, implementation, monitoring and evaluation of national programs for various commodities and disciplines will also be under his supervision.

"Being a researcher myself, I hope to be able to provide solutions to some of the problems that researchers encounter when dealing with the bureaucracy. The most perennial is the delay of the release of funds. I want our stakeholders or reserachers to feel that we are working hard for them," averred Dr. Sangalang.

He hopes to systematize the operations of NPD so that it will be more efficient. For him, efficiency in work performance can lead to excellence. He believes that as NPD becomes more efficient in its job, its clients – the researchers, can be more productive in generating information and technologies that could help improve the lives of our farmers and fisherfolk.

Frederic Brugada, a staff of NPD, believes that the change is for the good. Josephine Pingco, one of the technical coordinators, is excited that they have a new division head. She hopes that the staff can easily adjust to the management style of Dr. Sangalang and that he will also be able to appreciate their different personalities. She quipped, "I hope that he will be patient with us."

" I feel happy and hopeful," says Sharon de Vera. "I hope that he will not be afraid to take risks and stand by his decisions when they are challenged. We, his staff, will be very supportive to him."

Dr. Sangalang for his part, hopes as he did the first time he set foot at BAR, that he can make a difference. *(Maria Rowena S.A. Briones)*

## *Sciencescoping...*

*resources needs of Canadian fishery. When can the Philippines have one like this?*

*There has to be a long term partnership with government, industry, interest groups, business and the general public. We, at BAR together with the fisheries network, will do our share in terms of research and development.*

*The waters is a source of renewable wealth. All that we do is protect it, conserve and manage its treasures so they are not lost for posterity. (VAD)*

## *SSAC...*

reviewed include: a) conduct of external program review; b) plant genetic resources; c) biotechnology program assessment; d) corn program; d) on-farm research; e) integrated pest management; and f) assessment of high impact projects. The Committee agreed that the terms of reference in the conduct of external review will be discussed among the concerned agencies for them to come up with a consensus. Moreover, there should be a database on experts so it is easier to identify and tap them. Under the plant genetics resources, the Committee suggested that the program focuses, in the meantime, on conservation of the genetic resources as it considers intellectual property rights in the conservation efforts, among others.

The proponents of the biotechnology program assessment were advised to make a thorough review of literature on GMO risk assessment, establish the level of rigor of the risk assessment to be conducted, and make a report on the use of biotech research results. For the program on corn, the proponents should conduct adoption and impact evaluation studies on the corn technologies and to provide empirical evidence on the results of the action research.

The SSAC agreed that the proponent of the on-farm research(OFR) program should come up with one basic framework of OFR planning and implementation, conduct case studies of implementation especially in Muslim Mindanao, and assessment of OFR results and impact. For the IPM program, the proponents were advised to review quarantine policies and implementation as basis for strengthening the Bureau of Plant Industry quarantine service, review estimates of losses from IPM and conduct impact evaluation studies. For the assessment of high impact projects, the proponents will review the classification of technologies and provide information on adoption/impact of research results.

The SSAC is a group of senior experts and eminent scientists representing various disciplines. Among its functions are the following: a) monitors changes in the

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FEATURE

# Home gardens to feed the Filipinos

by *Likha C. Cuevas*

By keeping the faith, Filipinos can have food raised and grown in their own homes everyday. Keeping FAITH that is.

Food Always in the Home (FAITH) is a home food security program initiated by the former governor of Laguna, now DILG Secretary Joey Lina. His wife, Ms. Loretta Lina, coordinates the program that incorporates agriculture and nutrition for the benefit of the Filipino families. It is a home-based vegetable gardening and animal raising program for the family's own consumption, not for commercial purposes.

The acronym is religious in purpose, as this was adopted from a program founded by the Baptist missionaries in Pagsalang, Davao del Sur. However, the FAITH that Ms. Lina now heads is different from the original.

FAITH advocates the planting of a variety of vegetables and raising of small animals in the yard. It is a cashless and self-sustaining way of feeding a family as the family plants and harvests everyday and they don't have to buy food in the market. A study conducted by the FAITH monitoring group found that a family saves around P30-P106 a week through the FAITH program. Since not all harvest can be eaten, the surplus can be sold, even just in small amounts or *tingi*. Even if the family head doesn't have a job, the family still has something on the table. Therefore, it was not a surprise, as Ms. Lina soon found, that it is the jobless people who are advocating this program.

### *Training*

The program holds trainings for people in the barangays (three days) and for trainors (five days) who would disseminate FAITH in their own areas. The training is free in Laguna and participants just bring their own food during the training. Seeds and fishes for the home fishpond are given free. FAITH has trained trainors from Aurora, Batangas, Cavite, Bacolod, Camiguin, Leyte, Tarlac, Mindoro, Misamis, Pampanga, Quezon, and Manila. The topics in the first phase of the trainings are: companion gardening (planting four to five different crops in one plot so that the soil's nutrients are not depleted); container gardening; making and use of organic pesticides; edible landscaping (to beautify or landscape the vegetables); compost making; and vermiculture and vermicompost (use of earthworms in gardening).

In addition, the FAITH program teaches the people about the use of medicinal herbs and their micronutrient and antioxidant values. People learn about these plants in their gardens and know their uses. Vegetable nutrient values and vegetable groupings are also taught so the people can easily identify which crops to plant together in one plot. Correct harvesting is also taught as there are common practices that people must do away with.

The trainees are taught how to extract the seeds (from the fruits) and prepare these for the next planting. Ms. Lina pointed out that a harvest is not complete unless people have the seed from the crops or else there will be no replanting. This lessens the expense of distributing seeds to people and by teaching the people how to produce seeds, they will be encouraged to plant again. "We treat seeds as a precious commodity," Ms. Lina said.

Following the original plan of the FAITH program, after the first phase of the training (gardening), participants are qualified for the second phase which involves animals as the concept of FAITH is also applicable to fish and fowl. If one has 40 chickens of different ages and stock every one or two weeks, he can already harvest one chicken after 45 days. Then he can have another chicken the following week. This means that the family can have meat every week.

### *Easier to understand*

The components of the FAITH training are not new, Ms. Lina said, but it is unique because of the way these components are put together and how the information reach the grassroots level. The agricultural concepts are popularized for the participants for them to easily understand and apply these to their daily activities. Ms. Lina produced a handout in the form of a comic book with all the information and planning sheets needed. When planning their FAITH gardens, the participants are given crayons to color on the worksheets the different crops to be planted.

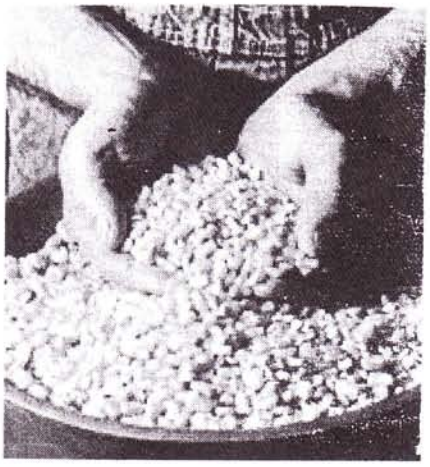
### *Concerns setting up FAITH*

One has to know if the people felt a need for the program before setting it up, "or else it would be a waste of resources and effort if we insisted on it," Ms. Lina explained. The FAITH Coordinator also found difficulty in setting up FAITH in areas like Baseco, Tondo, Manila because the community does not have much soil. Underneath is garbage and a few meters deeper is the Manila Bay water. Unless the soil is brought in pots and drums, the people will not have anything to plant on. Another concern is the mayor is not that interested in program. It is difficult to put up FAITH without the support of the local government unit (LGU) since this office will finance the bulk of the training for their communities. When the LGU is motivated and enthusiastic about the program, people are mobilized and the project runs smoothly. However, the problem with coursing the program through the political machinery is on its continuity. The program may stop once the administration changes.

Ms. Lina practices FAITH too and found fulfillment in the cycle of planting. "Productivity generates its own steam. Once you've tried it, you'll never let the high energy level down," she said. When she was still in Laguna, she had her vegetable garden. She was saving around P300 a week on food, especially when she was producing her own chicken and eggs (from her own FAITH poultry). Now that her family resides in a townhouse, Ms. Lina planted in containers hanging on her walls. Intrigued neighbors were given seeds and then they, too, started their own container gardens. Soon, the people from the adjacent village were asking for a FAITH training.

*see Home, page 6*

# Proper tending of corn after harvest



by *Mary Charlotte O. Fresco*

Next to rice, corn is the most known and important crop in the country. It is the staple food of about 20% of the Filipino population and an essential source of poultry and animal feed. But admit it or not, we do not properly treat corn the way we treat rice, especially in terms of postharvest management. In fact, corn is among the crops that are most susceptible to postharvest diseases, including molds and aflatoxin.

In the Philippines, postharvest losses remain as one of the most serious problems in the corn industry. A profit of as high as P1.6 billion is lost from our local corn farmers annually.

A proof of how serious the postharvest problem in corn is reflected in the result of a study conducted by the National Postharvest Institute for Research and Extension (NAPHIRE), which shows that 70% of all the stocks in government and private warehouses were found contaminated with aflatoxin.

Aflatoxin is not as simple as it sounds. Produced by a mold called *Aspergillus flavus* , aflatoxin can be fatal to both human and animals if contamination of the products consumed goes beyond the safe level (20 parts per billion (ppb). Foods with high level of aflatoxin can cause acute diseases like hemorrhage, acute liver damage, edema (abnormal build-up of blood fluids between tissues), indigestion, and cancer.

During the last two years, the Philippines was threatened of becoming a "basket of substandard commodities" due to the influx of locally-produced foods contaminated with aflatoxin such as peanut, corn, legumes and dairy products from animals that consume aflatoxin-contaminated feeds.

The problems in postproduction are as serious as their causes. Most of them are a combination of technological and "attitude" problems. Among the major causes are absence of sufficient and effective postharvest facilities and technologies and lack of knowledge and appropriate trainings on storage, warehousing, maintenance, and handling facilities. Also, there are some wise large-scale corn producers and commercial traders who "strategically" store their stocks and wait for the time when they can sell their products for higher price without considering the condition of the products while in storage.

### *First things first*

The principle of start-things-right is proven to work well even in corn grain storage. Prior to storage, make sure that grains are free from damages from harvesting, shelling, drying, and transport. Damage in kernel could be a venue of pathogens-microorganisms that induce disease and infection.

Also, one must critically consider the moisture content of grains, which should not exceed 13-14%. The longer you want to store them, the lower should be the grain's moisture content. The amount of air in the storage room can be practically monitored using a thermometer and psychromoter (twin thermometer).

### *On aflatoxin control*

Aflatoxin, being a dreaded toxin is really hard to control and the only practical means to effectively eliminate them is by preventing its growth.

Here are some basic yet useful recommendations in controlling the aflatoxin contamination:

- Harvest the corn ears when they reach full maturity (40 days after silking).
- Use a sheller that can minimize injuries to kernel because damaged grains are prone to microbial infection.
- Minimize the moisture content to 18-22% prior to shelling so that grains can withstand mechanical stress during shelling.
- After shelling, corn kernels should be dried right away while maintaining the moisture content level to 13-14%.
- Avoid mixing damaged/ moldy kernels with the good ones.
- Maintain good sanitation and hygiene in the storage warehouse.

In corn storage, we are not just dealing with "minute" enemies but also with the bigger ones, especially the rodents and weevils.

### *On rodent/rat control*

Rodents or rats are considered as excellent competitor of man for food. They can inflict incalculable damage/losses to crops like rice and corn when not given special attention.

They are many ways to effectively control them, among which are using poison baits, mechanical traps, and sanitation program in and around the warehouse. Those protective measures were proven to reduce stock losses by 87%.

### *On weevil control*

Corn weevil can hardly be seen, but the damage it inflicts is quite evident on damaged kernels. Weevils have elongated snouts that they use to drill the kernels and later turn them to dry powder.

One effective way to control them is through regular inspection. It involves systematic way of piling the stocks to provide ample space for inspection and stock inventory.
It is also important that storage structures and containers are well disinfected or sterilized. This can be easily done through spraying, dusting, fogging, and fumigation.

With proper grain storage management, the quality of raw materials is not put at stake, because decrease in quality would also mean decrease in substantial earnings.■

*Reference: Corn Postharvest Technology Information Guide. DA- RFU 2, Tuguegarao City, Cagayan.*

# Hand tractor that furrows, fertilizes & covers soil all at once

by *Rita T. dela Cruz*

With the latest technologies and innovations in farming, a lot of machines have been developed to make the life of farmers easier such as hand tractors or power tillers. Compared to automated power tillers, hand tractors are no match in terms of productivity but hand tractors compared to plows and other traditional means of preparing the land are far more efficient.

Traditional hand tractors function mainly to furrow lands. Planting the seeds, applying the fertilizer and covering the soil still have to be done manually by the farmers and this is a time consuming and rigorous process.

Designing and developing a hand tractor that could do all the job of furrowing, planting seeds, applying fertilizer, and covering them with soil all at once was the challenge that was addressed by the engineers from Department of Agriculture-Cagayan Valley Lowland and Marine Research Outreach Station (DA-CVLMROS).

The idea is to develop a multi-crop seeder that could be attached to ordinary hand tractor to increase its capability and reduce labor. They recently developed the seeder-fertilizer applicator.

Using locally available materials, the fabrication of the applicator was done at the DA-CVLMROS workshop. The prototype was able to perform four different functions in one operation. It opens a single furrow, drops seeds and fertilizer and covers with soil. It is also multi-crop since it was designed for upland crops like corn, mungbean, and peanut. Its field capacity ranges from 0.47 to 1 hectare a day depending on what crop to plant. Moreover, the applicator can be easily attached to locally made hand tractors.

The hand tractor applicator has six components: hoppers, metering plates, actuator, furrow opener, covering device, and frame.

Hoppers are the large funnel-shaped containers where the seeds are being stored and dispensed. The hand tractor applicator has two hoppers, one compartment for seeds and another for the fertilizer. Metering plates are seed gauging device that is replaceable depending on the kind of crop to be planted. The actuator activates the applicator. It has two kinds of cams depending on the types of crop to plant. The furrow opener creates the furrow where the seed and fertilizer are simultaneously discharged. The covering device covers the seed and fertilizer with soil after discharging them into the furrow. The frame supports the whole applicator and is connected to the hand tractor providing the hitching point.

The prototype was initially tested in the field to determine its capability. The seeding rate of the applicator depends on the physical characteristics of the seed or grain to be planted. Corn has the highest seeding efficiency ratings while peanut has the lowest.

Considering the savings in getting men and animals to work per hectare of land, with the hand tractor applicator, farmers could save at least 94% compared to the 78% savings using manual seeding and animal drawn seeder. Because of the cost of the hand tractor and its attachment, acquiring it would be rewarding to those farmers who own a large area of land. ■

*(Source: "Development of Hand Tractor Mounted Seeder-Fertilizer Applicator" by Generoso M. Oli, Villamor I. Eslava, Edwin S. Agapito, Rey B. Vubero, Lito M. Caranguian, Genebib G. Dante, and Michael L. Calimag of the Department of Agriculture-Cagayan Valley Lowland and Marine Research Outreach Station (DA-CVLMROS), Minanga Norte, Iguig, Cagayan 3504, Philippines)*

## *World...*

are taken to solve this problem.

For developing countries, the Laureates asked leaders to focus their growth policies and resources on sustainable projects in agriculture and rural development since majority of the poor live in rural areas and rely on agriculture for livelihood. This includes pooling enough money to build roads, markets, and provide electricity. Likewise, they advised that leaders work together to strengthen the research and policy framework, which is the groundwork for agriculture, livestock, and aquatic productivity. However, this should be done in accordance with current environmental laws.

The Laureates also called for greater market access to food and agricultural products from developing countries. Poor countries have difficulty competing in the global market due to the heavy subsidies in industrialized countries and the imposition of non-tariff barriers by rich countries. Fairness in free trading policies, according to them, is needed to provide markets to poorer nations.

Lastly, they encouraged the promotion of programs on population stabilization. "Without population stabilization, our dedication to the production and distribution of food will only postpone the problems of even greater hunger in the world." *(Thea Kristina M. Pabuayon)*

## *Home...*

Ms. Lina proudly declares, "I tried to show that it can be done and I can eat cabbage planted on my wall. If I can do it, everybody can---with just the right kind and amount of backing."

The FAITH program discussion is part of the BAR Seminar Series held on June 5, 2002 in cooperation with the Postharvest, Food Science and Nutrition RDE Network. This seminar highlighted community-based approaches that addressed sustainability and political viability of nutrition programs. It also explored possible applications of these approaches to RDE programs of the Department of Agriculture. ■

# Fast forward: the genetically modified soybean

by *Mary Charlotte O. Fresco*

Doug Boisen is the first farmer in Nebraska, USA who took bold steps when he decided to plant his 450 acres of farm with so-called "transgenic" soybean. His reasons- the new biotech crop will save him more money through minimized herbicide and energy use.

This genetically modified (GM) soybean has been gaining "spotlight" from developed countries around the world since its introduction in the market in 1997. Like Mr. Boisen, the expectation is even high among big soybean exporters like USA, Argentina, and Canada that consider soybean as major ingredient of a wide range of foods and beverage products. Soybeans are good source of flour, meal, protein, oil, and lecithin.

Basically, there are two general types of GM soybeans grown commercially: those that were modified to tolerate herbicides and those modified to contain high oleic acid that helps reduce blood cholesterol level. Of the two, the herbicide tolerant ones are more popular and as expected more controversial.

### *The herbicide-tolerant ones*

The major reason why scientists genetically engineered several crops to be resistant to the application of herbicide is to make weed management as easy and economical as possible.

Of these new GM soybean varieties, the most popular and considered as "best choice" among the farmers is the ***glyphospate*** tolerant which was released to foreign market as *Roundup Ready* ™.

*Roundup Ready* ™ soybean was developed by life sciences giant Monsanto Corporation to resist the *Roundup* ™ herbicide. This simply means that a farmer can spray the Roundup ™ herbicide from plant emergence until flowering stage without damaging the plant and affecting its yield potential.

There was no magic involved in *Roundup Ready* ™ soybeans but pure conventional breeding, according to biotechnology experts.

The gene incorporated to more than 1,000 commercial varieties of soybeans came from a beneficial soil bacterium called *Agrobacterium sp.* The modification made in the genes of plants enables them to produce a new protein that detoxifies or resists the herbicide.

Despite the various health and environmental concerns raised by consumer groups against *Roundup Ready* ™ soybean, the number of farmers using this technology has been growing steadily for the last five years. According to them, planting herbicide-tolerant soybean makes weed management simpler at a lower cost, minimizes herbicide application, and encourages zero tillage thus, protecting the soil from erosion.

***Glyphosate*** tolerant varieties are approved for commercial planting, importation and processing for food and feed in 12 countries including USA, Argentina, Canada, Europe, and Brazil- the second largest producer of soybean next to the US.

Along with ***glyphospate*** tolerant, there are also ***ammonium glufosinate*** soybean varieties that are tolerant to *glufosinate* herbicide. These GM soybeans were pioneered by Aventis, (formerly AgrEvo), a big company dedicated in the discovery and development of wide range of pharmaceutical products.

The *glufosinate* herbicide contains an active ingredient called *phosphinothricin* that kills weeds by blocking a plant enzyme called *glutamine synthase*, which is needed by plant to utilize nitrogen.

Biotechnologist modified the soybean plant to become resistant to *glufosinate* herbicide by incorporating an enzyme called *phosphinothricin acetyltransferase* (PAT), which they got from a strain of *Streptomyce* bacterium.

These *glufosinate* herbicide tolerant soybeans gained approval for commercial planting and processing for food and feed from the Animal and Plant Health Inspection Service (APHIS), United States in April 1998. They are marketed as *Basta*®, *Ignite*®, *Rely*®, *Liberty*®, *Harvest*®, and *Finale*®. In Canada, *glufosinate* herbicide tolerant soybean obtained approval for commercial planting and food processing while in Japan it was only approved for commercial planting.

### *On the status of GM soybeans*

Over the past few years, innumerable reports and studies came up about GM soybeans and most of them claimed that GM soybeans have become increasingly available to farmers worldwide.

In the United States alone, 71 percent of almost 30.1 million hectares of land are planted with GM soybeans. In 2000, large plantations of GM soybeans were reported from countries like Argentina, Canada, Mexico, Romania, and Uruguay. Argentina had about 98 percent of the total of 11.2 million hectares planted to herbicide-tolerant soybean.

Here in the Philippines, reports say that we are continuously buying 3000,000 tons of GM soybeans each year from the US. Moreover, the amount of imported soybean is expected to double in the later part of the year after President Gloria Macapagal-Arroyo approved the general guidelines on the importation of GE crops.

### *The issues of safeness*

GM foods and other biotechnology products are increasingly becoming part of our everyday life and diet. They have their good and bad points that should be taken with equal importance. The laborious process of determining and assessing biotech products' food and environmental safety falls on the hands of major regulatory bodies.

Just recently, as controversy over possible banning of imported oil derived from GM soybeans heightened,

see Soybean, page 8

## *SSAC...*

global and national contexts and the implications of these on Philippine agriculture; b) recommends medium- and long-term strategies and priorities of the national R&D based on an in-depth and continuing review of research activities at the national, regional and international levels; and c) evaluates the quality and relevance of public-funded research and research-related programs.

The Committee is chaired by Dr. Fernando Bernardo (Genetics and Plant Breeding, North Carolina State University) and co-chaired by Prof. Solita Monsod (Economics and Macropolicy, University of Pennsylvania). The members include: Dr. Gelia Castillo (Rural Sociology, Cornell University); Dr. Edgardo Gomez (Marine Biology, University of California-San Diego); Dr. William Padolina (Botany, major in Phytochemistry, University of Texas); Dr. Florendo Quebral (Plant Pathology, University of Illinois); and Dr. Ernesto Rigor (Reproductive Physiology, University of Wisconsin). *V.A. Duldulao and MC.O. Fresco*

## *Soybean...*

major regulatory agencies such as the U.S. Food and Drug Administration (FDA), UK Advisory Committee on Novel Foods and Processes (ACNFDP), and US Department of Agriculture declared that genetically modified soybeans are no different from non-GM soybeans in terms of food safety and nutritional value. An article released by American Soybean Association, a non-profit, farmer-controlled organisation working to strengthen soybeans, says that soy oil derived from genetically modified beans is absolutely safe for human consumption. In fact, more than 250 million Americans have been using such oil for more than five years but show no ill effects.

As for the European countries, the assessment made by European Union Deliberate Release Directive and UK Advisory Committee on Release to the Environment (ACRE) on environment safety of GM soybeans had resulted to approval of GM soybeans for market in the European Union for food processing, but not for cultivation.

Like the controversial *bt* corn, the GM soybean has offered a beacon of hope for places where poverty and hunger is prevalent.

Truly, the advances in genetic engineering have always resulted to generating grounds of concerns and debates among various civic groups. But the "tangible" benefits derived from such scientific advances should reach those who till the land for a living and the people who have the right to improve their nutritional status and standard of life. ■

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# Barangay nutrition and household food security seminar conducted

The agricultural research development extension (RDE) programs face issues on sustainability. However, there are experiences in the approaches to nutrition improvement and home food security in the barangays that are worth sharing with others that could provide strategies for both political support and program sustainability.

With this in mind, the Nutrition group of the Postharvest, Food Science and Nutrition RDE Network (PFSNN) in collaboration with the Bureau of Agricultural Research (BAR) conducted a seminar on June 5, 2002 that featured these approaches in a manner consistent with the RDE policies of the Department of Agriculture (DA).

The "Barangay-based Approaches to Nutrition Improvement and Ensuring Household Food Security," seminar featured presentations from Ms. Mylene Isleta from the Nutrition Center of the Philippines (NCP) and Ms. Loretta A. Lina, coordinator of the Food Always in the Home (FAITH) Program. The seminar consisted of discussions on the Barangay Program Action for Nutrition (BPAN) of NCP and the FAITH Program.

In BPAN, the mayors, barangay captains, and barangay-based cooperators can work hand-in-hand with NCP to implement feasible nutrition interventions to prevent and control malnutrition in their respective barangays. The action program involved: nutrition information education; home food security; Vitamin A, iron and iodine supplementation; food fortification; and growth monitoring under the cooperation and leadership of these local officials.

FAITH, on the other hand, is a home food security program wherein agriculture and nutrition are incorporated for the benefit of the Filipino families. It is a home-based vegetable gardening and animal raising program for the family's own consumption and not for commercial purposes. The FAITH trainings include: companion gardening, container gardening, organic pesticides, edible landscaping, compost making, vermiculture, and vermicomposting.

There was also an exchange of ideas on the possible applications of the strategies employed by the programs that highlighted community-based approaches addressing the sustainability and political viability of nutrition programs. The possible applications of the approaches were also explored for other RDE programs.

This seminar is one of BAR's Seminar Series that provides a forum for presenting and disseminating new information from research activities and experiences of the R&D experts. The seminar series can be useful in generating support and appropriate action on current or emerging issues or concerns affecting the agriculture and fisheries sector. *(Likha C. Cuevas).*

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# BAR sets tone for fisheries research discussions


In a bid to contribute to food security and poverty eradication in developing countries, representatives from the International Center for Living Aquatic Resources Management (ICLARM) or the World Fish Center discussed new research priorities and funding sources with experts from the Philippines' fisheries and aquatic resources sector on 25 June 2002 at the Sulo Hotel, Quezon City.

The participants identified six program areas for future collaboration: coastal resources management, stock assessment, socio-economics and policy, fish base, the need to be in line with the Fisheries Resource Management Project (FRMP), and biodiversity. BAR Director Eliseo R. Ponce, who delivered the welcome remarks, set the tone for the discussion by challenging ICLARM and the Filipino experts to play a catalytic and pivotal role in strengthening the country's fisheries and aquaculture sector. He is optimistic that a regular dialogue not only with scientists but with policymakers could influence the way relevant policies are shaped.

Likewise, Dr. Meryl Williams, director general of ICLARM encouraged the Filipino participants to be proactive in developing the proposals. "The Philippines should not wait for someone to prepare the proposals, but help ICLARM in making them , that is the essence of strategic research alliances," she said.

Representatives from ICLARM were: Drs. Williams, Modadugu Gupta (Director, International Relations), Alphis

*see ICLARM, page 8*

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IPB introduces 11 new hybrid ...page 8

## We can combat El Niño, NTL David says

*by Mary Charlotte O. Fresco*

The incessant heavy rains we experienced the last few weeks are not a concrete assurance that no drought will occur this latter part of the year. In fact, the experts observing our weather and climate conditions claim that it is one of the signs that an El Niño episode is likely to take place.

But there is no reason to panic, there are mitigating measures crafted to help us cope with the devastating effects of drought. And with proper support to implement these measures, it is possible for us to combat the effects of El Niño.

This is among the major points highlighted by UP Los Baños Chancellor and National Team Leader for Irrigation and Drainage Wilfredo David in a forum held at the DA-ITCAF

*see El Niño, page 5*

SCIENCESCOPING

# Understanding the soybean

*There is more to the soybean than just the simple bean we know.*

*Soybean was a wild plant growing from five to six feet tall with large physical structure and few seeds and primarily used as forage crop. It was the Chinese that domesticated it. Called "Wu Ku" in ancient China, soybean was considered as one of the five sacred grains, with rice, wheat, barley, and millet among the others, and was sown with great ceremony by the emperors. It was first domesticated in the 11th century B.C. in the eastern half of North China. The cultivated soybean was introduced to Korea then into Japan. It reached the United States through the seeds brought by Samuel Bowen, a seaman, from China via England and was first planted in Georgia in 1725. It made its way to the Philippines in the 17th century. It became an important food crop only in the 1920s.*

*In describing the soybean, Peter Marshall and Dan Imhoff said that, it is only now that the soybean is understood. It is a plant of complexity and contradiction. It possesses the characteristics of both animal protein and fuel oil; can be rendered into a meat like fiber at the same time a cow like milk. Sometimes it is referred to as "Cow of China." While it can provide low vegetable protein, it is also the mainstay of the livestock feed industry. The soybean is relatively a self-sufficient crop possessing the soil enriching properties of leguminous plants- the ability to draw nitrogen from the air and transfers this to the roots.*

*The soybean can be turned into many products such as soy flour for bakery products, soy protein extracts, defatted soy flakes, soy meat, soy concentrates, soy isolates and full fat flour. From soy fatted flour, a cheap meat substitute for bacon can be made. A non -dairy ice cream which is a blend of tofu, soy milk, and other soy protein is a favorite of weight watchers in the U.S.*

*Shortages in printing ink in the 1990s led to the quest for an alternative and soy oil was singled out of 2000 other plant formulations. The printers found this to be relatively inexpensive, had acceptable viscosity that allowed pigments to show through more sharply and brilliantly. By 1997, one third of U.S. newspapers used soy-based ink. This can be used longer and is easier to clean up. Soybean oil is also used to produce rigid urethane foam and soy protein can be used to improve the properties of* ***polyurethane*** *foams, increasing their strength, flame resistance and their biodegradability.*

*Now, I can associate what the painter of our house was saying when he extolled the virtues of* ***polioritin,*** *which at that time I did not understand. But my chemical engineer son came to the rescue and told me that what the painter was saying was polyurethane which he used in painting our floor and the stairs. With the polyurethane coating, the floor does not burn.*

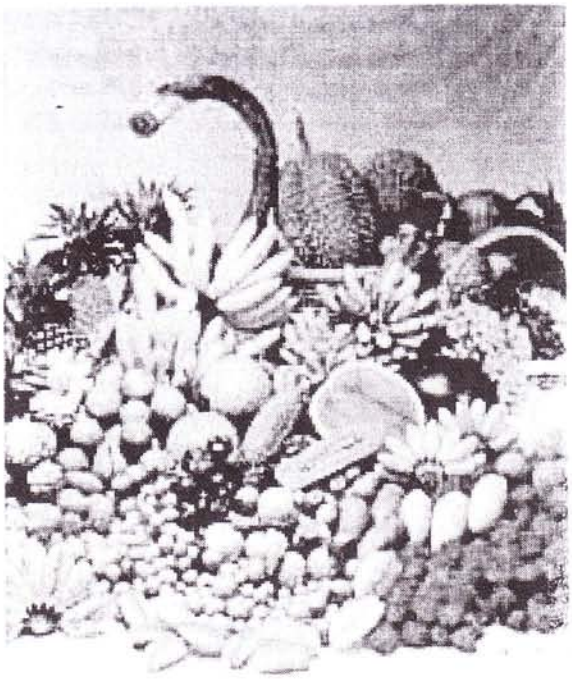
*In an article by Dr. Harry Synder of the Volunteers in Technical Assistance (VITA), soybean is a valuable part of the world's food supply and the systems that produce and deliver food. The production has grown rapidly and while it is widespread, soybeans is mostly produced in temperate countries with the United States producing half of the total followed by Brazil, China, and Argentina. The Philippines cannot produce its own soybeans needs and so it is the biggest importer of U.S. soybean meal and the import is increasing. Our country buys about 300,000 tons of soybeans and the three soybean crushing companies import one million metric tons of soy meal yearly for the poultry and swine industry. And then, if one considers the food products that we are buying from the U.S., then we are importing more. Soybean is said to be present in 60 percent of processed foods eaten everyday.*

*Now, I remember the paddling noise similar to washing clothes by the women in the community where I lived but that was three decades ago. They do not plant this crop anymore. Why can't soybean be produced in our country? If this is an off-season crop, a crop after rice, then maybe it can take the place of tobacco or a part of the tobacco areas. Five regions had been growing tobacco in the country so this is a big area for soybean. Aside from generating income, it also helps in breaking the pest and disease cycle associated with continuous cropping of the same crop. Cagayan Valley is a*

*See Sciencescoping, page 6*

# PhilFruits: A vision for world-class Philippine fruits

*by Likha C. Cuevas*



In the next few years, we can make our durian candies and dried mangoes as items in grocery shelves all over the world. Our bananas, pineapples, and avocados and other processed fruits will have longer shelf life. Our small-scale farmers' produce, together with that by the commercial fruit growers, will have access to the world market. This is how the Department of Agriculture (DA) sees the future for this industry. The Philippine Tropical Fruits Research Institute (PhilFruits), a semi-autonomous unit under the Bureau of Plant Industry (BPI), will be the instrument to this vision. The DA sees PhilFruits as an institution that will promote agro-industrialization in rural communities by modernizing small to medium-scale farms through provision of information, technologies, and support services in accordance with global standards.

The fruit industry plays a big part in our economy. The agriculture and fisheries sector accounted for almost 20% of the country's total GNP. The average production value of crops was P230.81 billion and 19.9% (P45.9 billion) of it was contributed by the fruits industry. Statistics shows that in 1998, it generated US$40 million in export earnings. The DA also estimates that at least 10 million people are employed by the mango, banana, papaya, pineapple, and cashew industries. There is still a lot of potential that can be tapped for these Philippine fruits.

Many government agencies have implemented programs to solve the concerns of the industry --- from access to agricultural resources and services to market information. However, the agriculture sector is in need of an institution to orchestrate all on-going R&D efforts on fruits across the country. Even though BPI has various divisions and experiment stations that have several functions and experiences in dealing with various commodities, it has difficulty in achieving more research results due to inadequate funds and manpower capability. Fruit R&D networks in the 15 regions need better coordination and more financial and infrastructure support to meet future demands of the fruit industry. Because of this, the BPI- Davao National Crop Research and Development Center (NCRDC) was converted to PhilFruits, under the Agriculture and Fisheries Modernization Act (AFMA) and Executive Order 162, to lead, guide, fund, and undertake RDE activities, generate effective technologies beneficial to farmers.

To help PhilFruits on its feet, the Bureau of Agricultural Research (BAR) in 2000 provided P10 million seed money to BPI as start-up fund to establish the PhilFruits office. In 2001, P5 million was given to support the DA – Regional Field Unit 11 and another P5 million was given to PhilFruits for its development. Plans for laboratory construction for biotechnology, soils, plant physiology, germplasm, seed processing plant and storage, and database/biometrics/statistics are underway. Improvement and expansion of the existing laboratories for crop protection and seed and seedling production are also needed. These are essential for PhilFruits to ensure global competitiveness of fruits in the country.

These initial activities would pave way for PhilFruits' operation in establishing and maintaining Philippine fruit germplasm and seed production; pest surveillance and early warning system; technology generation; and technology promotion. The institution is viewed as an R&D network with its central experiment station at PhilFruits main office as the nucleus, with commodity-specific and strategically located key research centers in different parts of the country.

With a modernized R&D institution where scientists, researchers, and extension workers convene, the dream of having Philippine fruits around the world seems not far-fetched.■

# Educating the public about harmful algal bloom

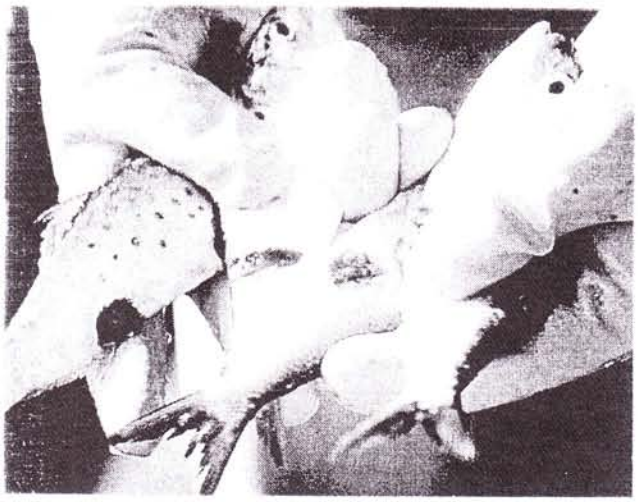
*by Rita T. dela Cruz*

It may be a relatively new term for some but harmful algal bloom or HAB refers to the thriving or blooming of the marine algae called, *Pyrodinium bahamenses var. compresa* found on or near the surface of the sea. The label "harmful" was derived because of the toxic substances that these algae emit during their proliferation. The toxin could be fatal to man consuming the products from the sea. In layman's term, HAB is synonymous to "red tide".

According to the Department of Health (DOH), red tide poisoning is common from the month of May to August because it is the time when the marine algae or *phytoplankton* usually breed. Marine waters that are characteristically blue or green and relatively clear are discolored when the algae bloom releases pigments. Although referred to as "red tides", HAB could also come in other pigments like brown, yellow, green or whitish. These are lethal when ingested either by animals and humans. According to the National Oceanic and Atmospheric Administration (NOAA), a research center based in Washington, the harmful nature of HAB could be felt in two ways: physical (risk to consumers from the fish and shellfish bearing the toxin); and economic harm (risk of losing the fisherfolk livelihood).

***The need to educate the public***

It was only in 1983 that people became aware of the effect of HAB when shellfish poisoning was reported in Samar, Philippines. Poisoning cases continue due to people's lack of information about HAB. There were even a few times when people rejected the idea that algae produce these toxins during bloom.



In 1988, the Bureau of Fisheries and Aquatic Resources (BFAR) created the National Red Tide Task Force (NRTTF) to monitor red tide in the country and provide information and update the public about its effects. A red tide ban is imposed when the organism's density is 500 cells per liter of sea water, and if the red tide toxin level reaches 40 micrograms per 100 grams of shellfish meat. Immediately, people are officially warned about the presence of red tide in the water by BFAR director or NRTTF chairman. In areas where red tide rarely occurs, information about the reported cases come from the DOH and then forwarded to BFAR. If in any case there are already red tide victims, information need to be confirmed first by the DOH before disseminating it to the public but it is important that all sea activities are stopped by them.

***Strategies to lessen the harmful effects of algal bloom***

Public education plays an important role in minimizing the harmful effects of algal bloom. Realizing such importance, the Marine Science Institute (MSI) of the University of the Philippines Diliman conducted a workshop to study the strategies and mechanism used by NRTTF, the leading task committee in alerting the public about red tide and in their campaign for public awareness about HAB. The NRTTF's information campaign uses both formal and informal forms such as orientation seminars, trainings, advocacy meetings, lectures and technical services. They use multi-media aid particularly in the issuance of public service announcements. They coordinate with the Department of Education Culture and Sports (DECS) to include HAB as one of the subjects in elementary and high school.

***Problems in educating the public***

One purpose of the workshop is to determine the problems that NRTTF encounters in their public information campaign so that possible solutions could be presented. Initially, six problems were identified, namely: lack of funds, insufficient support from higher officials, public resistance, need for communication equipment, non-availability of data, and inadequate media support.

Inadequate funding is one of the main problems in any organization for without it, mobilizing the people is hard to achieve. One of the recommendations during the workshop is the proper prioritization of funds. NRTTF should be provided with funds for them to implement communication campaigns

*See opposite page*

## *Educating...*

particularly in areas affected by HAB. The Local Government Unit (LGU) should also have an active participation in this task. Since the occurrence of red tide is a natural phenomenon, it should be one of the main concerns. Support from higher officials is also an important aspect since they are the ones whom the Task Force coordinates with particularly after the affected areas are detected.

Public resistance has been the main driving point of this public campaign, people resist and so the authority must continue to insist. As Ms. Josefina A. Genesera, senior aquaculturist from BFAR, mentioned, it is hard to educate a resisting public because of their rooted culture and beliefs. The NRTTF is hopeful that after all these information campaigns, their efforts will pay off.

Communication equipment is an important factor in any information campaign. Inadequacy in this aspect could cause tremendous delay of information that need to be transmitted immediately. Another cause of delayed information is the unavailability of data especially during the analysis of samples.

Updates and public service announcements are usually not publicized and sometimes ignored in favor of other sensationalized news, thus hampering information dissemination.■

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## *El Niño...*

Conference Room recently. The forum was coordinated by the Department of Agriculture- Secretary Technical Advisory Group (DA-STAG).

Together with the key players in DA attached agencies and staff bureaus, and representatives from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAG-ASA) the causes, nature and threats of El Niño particularly on our agricultural crops were discussed. Dr. David emphasized the importance of really knowing what the El Niño is all about as if it is a season that comes and goes. Using an interactive presentation, he clearly showed how El Niño happens and the changes it brings to our climate and weather patterns.

### *Understanding El Niño*

To common people, El Niño may mean nothing but a prolonged drought. But when you take it in larger perspective, it is, in fact, a great interaction between the ocean and the atmosphere that brings drastic effect on global climate.

El Niño is a Spanish name for "The Boy" or "Christ Child" given by some fishermen who first experienced the warming of waters off Peru during Christmas-time.

But what really happens when there is an El Niño?

The El Niño Southern Oscillation (ENSO) is an abnormal warming of the ocean surface because of the disruption of the ocean-atmosphere system in the tropical Pacific.

It starts to occur when the atmospheric pressure becomes lower than the average in southern Pacific (represented by Tahiti) and much higher than the average on the western side (over the Philippines, Indonesia, and Australia). This drop in pressure difference upsets the normal wind circulation. When this happens, no "usual cross-ocean pressure differential" can drive the winds far westward; the trade winds weaken and do not reach the shores of the western Pacific countries. But during the warm episode, the direction is reversed, the Pacific trade winds is surged back eastward. This "see-saw" pattern is the reason why there are flooding in other parts of the world like in Peru and drought in countries like Indonesia, Philippines, and Australia.

El Niño usually occurs every two to seven years. The most intense El Niño episode in our country happened in 1997-1998 when rice production dropped to a low of 24%.

### *Effects of El Niño*

Just like an insect pest that attacks first on the smallest part of plant, El Niño's first target are the small bodies of water like the rainfed areas, small streams and creeks, small run-off-the-river irrigation systems, and farm

*See El Niño, page 6*

# We have a responsibility to fulfill –Director's b-day message

It was a small but joyous occasion for the staff of the Bureau of Agricultural Research (BAR) to gather together and greet Dr. Ponce on his birthday on 14 June 2002.

How was it different from the other birthdays he had?

It was simple yet meaningful.

After the singing and the blowing of candles, the crowd asked for a brief message from the celebrator. He thanked the staff for everything particularly for making BAR what it is today. He encouraged them to overcome obstacles and do what they can to improve the institution. He said that, not doing anything would not do any good. "We have to do what we can not just because it's part of our job but because we have a responsibility to fulfill."

High achievement always takes place in a framework of high expectation. This aphorism holds true for him. It was enough to say that without him, the Bureau won't be what is it today. As Mr. Hamlet Dala, head of the Administrative Division exclaimed, "...for the man who heads the Bureau, there's no room for mediocrity in an institution that strives for excellence." (*Rita T. dela Cruz*)

## *El Niño...*

ponds with small water impounding irrigation systems. According to Dr. David, water flow is greatly reduced or even dry up completely.

Next in line are the large water storage entities like reservoirs and aquifers (groundwater). Water stored in reservoirs rapidly decreases due to increased pressure to release more water and high rate of evapotranspiration.

***Bracing for El Niño***

Since water is our outmost concern during El Niño, we might as well use it efficiently.

Dr. David, who is an expert in irrigation in Asia, proposed that a strategic irrigation action plan is the ultimate key for us to fight El Niño.

Most of the action plans deal with the development and rehabilitation of irrigation facilities. It involves the construction of shallow tubewell (STW) in alluvial plains or places near the sedimentary deposits of river and streams and high capacity low-lift pump (LLP) that can tap water from large rivers and tail water in large national irrigation systems.

Another practical irrigation facility that can be tapped is the small water-impounding project (SWIP) like dam and small farm reservoir that can efficiently collect rainfall during periods of heavy rains. Even a small farmer can own them since SWIPs do not require big capital and are easy to manage.

Dr. David added that government must fast track the rehabilitation and improvement of the performance of at least 70,000 ha of national and communal irrigation systems (NIS and CIS).

Farmers, being the key player in agricultural production, can be effective partners in fighting El Nino by being strategic enough to select the right kind of plants to grow. Dr. David recommended selecting crops that are more tolerant to heat and drought which require less amount of water.

Also, farmers are advised to use direct seeding (*sabog tanim*), utilize appropriate farm mechanization (power tiller for land preparation and reapers for harvesting) and manipulate cropping systems by adjusting cropping calendar.

Moreover, he pointed out the need to have a "war room" that would enable our policy makers and agricultural planners to discuss and predict the timing, duration, and magnitude of the dry spell. This, according to him, could help them design and formulate effective coping mechanisms against drought.

"We are not really sure what El Niño will bring, but if we take the necessary preparations and carry out effective planning and implementation, we could prevent our country from having another catastrophe," Dr. David emphasized.■

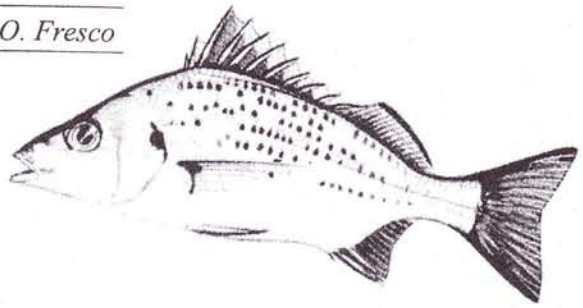
## *Sciencescoping...*

*producer of soybean in the country but only planted for its nitrogen-fixing nodule that enriches the soil for rice production. Isabela has tried making ice cream using soy milk as base.*

*The problems identified for soybean are not on the production aspect but on postharvest - physical injuries to the seeds, lack of drying facilities and lack of market. With the global demand and the manifold uses of the crop, could lack of market be a problem? (VAD)*■

# Are you familiar with *Pigek*?

*by Mary Charlotte O. Fresco*



In Cotabato and some provinces in Luzon, it is known as *pigek*, while in Northern Mindanao it is called *pigok*, but whatever one may prefer to call it, *pigek* is an important fish that should not be missed.

The information I found about this exotic fish is as scarce as the fish occurrence. Based on a survey conducted by the Bureau of Fisheries and Aquatic Resources (BFAR) in Region 12, *pigek*, which is recently found identical to *Mesopristes cancellatus*, is limited in the blessed waters of Rio Grande de Mindanao, Tamontaka River, and Pulangi River in Cotabato.

Aside from being rare, what makes *pigek* so special among fish connoisseurs is its excellent taste that can stand well with high-priced and serve-only-in special occasion -fish like *lapu-lapu* and blue marlin.

*Pigek* is known as Tapiroid grunter in other countries like East Indies and Papua New Guinea and considered as important constituent of their seafood panache.

But one may wonder, how does this fish with a queer name look like?

***A closer look at pigek***

In 1981, a group of fish biologists, headed by Mr. Sani Macabalang of BFAR, conducted a biological investigation on *pigek*. The study dealt with knowing the morphological characteristics, feeding and breeding habits of this fish with the hope that the results would be useful in the possible production of the fish under controlled condition.

*Pigek* is indeed an odd fish, for it thrives both in brackish and freshwater. Add to that peculiar characteristic is the fish's weight that is indirectly proportional to its length. Do you know that a small-sized *pigek* of about 125 mm can have a maximum weight of 650 g?

*Pigek*'s oblong body has a dominant silver color while the top of its head is uniformly dark greenish brown. Its dorsal part is decorated with four vertical purplish brown bands.

Unlike other fish that feed most on *phytoplankton* (small aquatic plants), *pigek*'s diet is comprised mostly of *zooplanktons* (small aquatic animals) and small shrimp. This feeding habit can be due to the fish's inferior mouth structure making *pigek* classified as "bottom feeder". Biologists found that the *pigek's* upper jaw, which has numerous minute sharp teeth, is longer than the lower. This adaptation has become very useful for *pigek* in scraping food from the riverbed.

***On fecundity and breeding***

When a female *pigek* reaches a weight of 310 grams, it is matured enough to release spawns or eggs. Known to have a high fecundity rate, a spawner can release an estimated number of eggs that range from 504,900 to 1, 700,00. Though *pigek* has the ability to produce eggs this many, the chance for the ova to hatch successfully is very small because they easily react to the slight change in water salinity.

In a breeding test conducted by fish biologists, where they confined two matured females and male *pigek* in a tank, they found that eggs broke (on the fifth day) due to low salinity (10 ppt). Also, since their eggs are extremely small, scientists explained that this maybe the reason why fertilization rate is very low.

*Pigek* is believed to breed all year round with probable peak from April to June where they migrate to offshore water with average salinity of 30 ppt.

Local fisherfolk in Mindanao claim that *pigek* catch is somewhat influenced by lunar cycle. According to them, their catch is greater during periods close to new moon especially between 11:00 PM and 1:00 AM. *Pigek* is likely to be caught in downstream or in coastal water.

The marketable weight for *pigek* usually ranges from 300 to 600 g.

***What's up with pigek?***

The latest information I gathered on *pigek* is somewhat depressing. According to a fish expert Henry Dejarme of MSU-Naawan, *pigek* is now in danger of becoming extinct. He added that there have been several cases of uncontrolled and unregulated harvesting of *pigek* reported. This, according to him, may be attributed to people's lack of knowledge on the biology and ecology of the fish.

Though there have been attempts to develop rearing techniques and proper ways to culture *pigek* in cage during the past few years, the problem of lack of seed stock was constantly faced.

Presently, efforts are underway to conserve and protect the remaining species. Hopefully, the government will provide necessary support to pursue the studies that deal primarily on generating seed production, broodstock and juvenile rearing management techniques. According to Mr. Dejarme, if these artificial breeding efforts will be sustained, there will be a continuous supply of seed stock for natural seeding and for commercial culture of *pigek* species.

With this, I look forward to writing another article which I will title, "You can now culture *Pigek*".■

*Reference:*
*Biological investigation and survey of* ***pigek****, a study conducted by Mr. Sani D. Macabalang, DA-Bureau of Fisheries and Aquatic Resources(BFAR) – Region 12, Cotabato City.*

## Web NEWS

**Biotech enriches iron content in rice**
*(http://www.jacn.org/cgi/reprint/21/suppl_3/184S.pdf)*

**Biotechnology can enhance yield and nutrition**
*(http://www.jacn.org/cgi/reprint/21/suppl_3/157S.pdf)*

**GM papaya research team receives 2002 von Humboldt Award**
*(http://www.news.cornell.edu/releases/July02/GonsalvesAward.bpf.html)*

**Effect of GM corn hybrids on fungi**
e-mail: *leocenter@iastate.edu*

# IPB introduces 11 new hybrid crops

The Institute of Plant Breeding (IPB) introduced 11 new crop varieties, which were recently developed by their plant breeders. The unwrapping of the new hybrid crops was part of the celebration of IPB's 27th Foundation Day on 5 June 2002, College, Laguna.

IPB, which was established under the College of Agriculture of the University of the Philippines Los Baños (CA-UPLB), is the country's breeding center for all crops, except rice. The Institute aims to strengthen the plant breeding researches of the country by producing improved plant varieties to help the country in addressing food security and global competitiveness.

Leading the celebration was IPB Director Desiree Hautea who presented the new plant varieties, which were bred the conventional way. These are: 2 new varieties of corn (*IPB 2004 and IPB 2006*), 4 improved tomato varieties (*Rosanna, Rica, Assunta, and Ara*), 1 variety of eggplant (*Tisay*), 2 mungbean varieties (*Pag-asa 19 and Pag-asa 21*), 1 new cassava variety (*Sultan 5*), and 1 new sweet poatato (*UPL Sp 16*). The new hybrid crops were proven to produce higher yield, resistant to pests and diseases, easier to grow, and have good shelf life. These new improved varieties have already been approved by the IPB Germplasm Registration and Release Office.

Germplasm conservation is one of the five programs of IPB which houses a total of 44,000 accessions of 500 species of crops. The germplasm collection was established a year after the Institute was founded.

In addition to these newly introduced varieties, IPB continues to develop other varieties not only of crops but also foliage and flowering plants. It expects to release five new varieties of *gumamela* which they will call, "Celebrity Star Series". (*Rita T. dela Cruz*)

**With information from Philippines TODAY*

## *BAR...*

Ponniah (Program Leader, Biodiversity and Genetic Resources Research Program), Mahfuzuddin Ahmed (Program Leader, Policy Research and Impact Assessment Program), Johann Bell (Program Leader, Coastal and Marine Resources Research Program), Mr. Len Garces (Assistant Scientist), and Mr. Rodolfo Reyes (Research Associate).

The Filipino participants were: Drs. Glenn Aguilar (National Team Leader for Capture Fisheries), Crispino Saclauso (National Team Leader for Aquaculture), Leonarda Mendoza (National Sub-Team Leader for Fisheries Postharvest and Marketing) and Dir. Cesario Pagdilao (Deputy Executive Director of Philippine Council for Aquatic Research and Development (PCAMRD).

The activity was also attended by experts and representatives from PCAMRD, Don Mariano Marcos Memorial State University, University of the Philippines, Los Baños, University of the Philippines, Visayas (UPV), University of the Philippines-Marine Science Institute (UP-MSI), Central Luzon State University (CLSU). Mindanao State University (MSU), Department of Environment and Natural Resources (DENR), Southeast Asian Fisheries and Development Center (SEAFDEC)-Aquaculture Department, Bureau of Fisheries and Aquatic Resources (BFAR), GIFT International Incorporated and Asian Development Bank and Bureau of Agricultural Research of the Department of Agriculture (DA-BAR).

The activity was jointly sponsored by DA-BAR , PCAMRD and ICLARM. (*Junelyn S. de la Rosa*)

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