



BAR concludes 13th NRS, recognizes outstanding R&D papers

The agriculture sector is in for new and exciting prospects as the Bureau of Agricultural Research (BAR) recognized and launched the latest technologies for agriculture and fisheries at the recently concluded 13th National Research Symposium (NRS), 5 October 2001.

Top scientists and researchers from various state colleges and universities and premiere research institutions were awarded more than P1million in cash prizes for generating technologies that can improve the plight of the country's agriculture and fisheries sectors.

This year's technologies were generated along the theme *New Science for Food Security and Poverty Alleviation*. Sen. Manuel Villar, committee chair on agriculture, graced the event as keynote speaker and led the opening of the exhibits together with Agriculture First Lady Monica Montemayor and Department of Agriculture Assistant Secretary for Administration and Finance Belinda Gonzales.

The papers for the NRS vied for the AFMA R&D Paper Awards, AFMA Best R&D Paper Awards and AFMA



Hon. Manuel B. Villar opens the exhibit with Atty. Monica M. Montemayor, Dr. Fernando A. Bernardo, Asst. Sec. Belinda A. Gonzales, Dr. Ruben L. Villareal (left) and Dr. Eliseo Ponce (right).

Outstanding R&D Paper Awards under the Unpublished Research Category, and the BAR Director's Award and the DA Secretary's Award under the Published Research Category.

Seven researches were presented with the prestigious AFMA Outstanding R&D Paper Award under the Unpublished Category. Winners include Judith Rodriguez et al. of PCA-Albay Research

Center for Crop Science Upstream Title, Epifania Agustin et al. of Mariano Marcos State University for the Crop Science Midstream/Downstream Title, Gigi Albor et al. of DA-Bureau of Fisheries and Aquatic Resources Region 10 for the Fisheries and Marine Science Midstream/Downstream Title, Agnes Zamora et al. of UPLB-Institute of

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GMA launches AFRDIS; teleconferences with farmers

President Gloria Macapagal-Arroyo graced the launching of the Agriculture and Fisheries R&D Information System (AFRDIS) during the Farmers-Fisherfolk Day sponsored by the Bureau of Agricultural Research on 5 October 2001. The President experienced first-hand the information technology by talking to farmers through an internet-facilitated video conference.

Central Luzon State University President Rodolfo Undan represented the

farmers during the video conferencing.

During the conference, Arroyo explained the importance of AFRDIS and its role in disseminating technology and research results to farmers. She encouraged the Central Luzon farmers to use and disseminate not only their region's researches and technologies but also those from other provinces. A certified grower from Muñoz also expressed his appreciation for the

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Sciencescoping

■ VA Duldulao



A harvest of technologies

When there are too many information to disseminate, we run out of space and this column suffers. It has to give way to the hot pieces of news lest they become stale. For true to our name, we steadfastly and religiously chronicle events and happenings every two weeks.

The National Research Symposium that ushered in the celebration of R & D week seemed like harvesting the fruits of one's labor for the year. The research project may not necessarily be conducted for one year but it is in this forum where the researchers and scientists present their work at the end of each year. And like a harvest that promises food, the R & D harvest of generated information and

technologies promises a bright future for agricultural and fisheries development. Similarly, a farmer or a fisherman who invests his time and effort with dedication, gets a bumper crop or catch. A researcher who does the same wins recognition for a worthy work. The winning papers won cash prizes amounting to more than a million and plaques that were awarded at the end of the celebration.

The symbolic presentation of some of the most significant technologies generated by R & D to the farmers and fisherfolk by no less than the President of the Philippines had been dramatic. Dramatic in the sense that the users of technologies were there

to accept them. Perhaps, this had been the first time that it was done.

The significance of the technologies will be felt when they will be used by the intended users. But from now and then, there is still a lot to do for these technologies to be acceptable to the farmers and fisherfolk. We translate these technologies from the language of science to the language of the extension worker, the ordinary farmer or the simple fisherman. We create awareness among people that these technologies exist and we get them interested to know more about them. We demonstrate the technology for the users to see that it works, that it can give them a comparative advantage, that it is simple and easy to use and that it is not costly nor it destroys their environment.

We have a long way to go but the road is clear.

More than ever, the importance of communication, training, and extension need not be overemphasized. These are the vehicles that will ultimately bring the technologies to those overly referred to as intended users ■

Gawad Saka 2001-2002

Garcia is outstanding agr'l scientist of the year



Dr. Mercedes U. Garcia, a scientist and professor at the University of the Philippines Los Baños (UPLB), emerged

from the shortlist of nine finalists for this year's search for Gawad Saka Outstanding Agricultural Scientist.

Armed with competent knowledge and skills in the field of biotechnology, Dr. Garcia pioneered the study on biological nitrogen fixation in rice and corn. She is also noted for her involvement in drafting the proposal for the establishment of the National Institute of Biotechnology and Applied Microbiology in 1979.

Dr. Garcia, a long time project leader of 14 other research projects funded by various agencies, developed and commercialized two important technologies: Bio-N, a fertilizer supplement that dramatically increases

the yield of rice and corn, and BIOTAB and BIOCORE, both organic fertilizers that are environment-friendly and affordable.

Dr. Garcia received P25, 000 cash prize and is entitled to a P1.5-million research grant.

The National Technical Committee created through Special Order 430, chaired by Bureau of Agricultural Research (BAR) Director Eliseo R. Ponce, evaluated the nominees. The criteria for evaluation used include relevance and impact of research projects; quality of scientific works, which is based on the publication of research works; and cost effectiveness of the research projects, which highlights their potential to reduce the cost of farm operations.

The search for the *Gawad Saka* Outstanding Agricultural Scientist is a regular activity of the Department of Agriculture (DA) as part of its recognition of the exemplary performance, innovations, and contributions of every Filipino researcher/scientist in modernizing the agriculture and fishery sectors. (Mary Charlotte O. Fresco)

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Protecting the savory sugpo

■ Junelyn S. de la Rosa

Prawn culture is one of the most profitable industries in the Philippines. Tiger prawns (*Penaeus monodon Fabricius*) or *sugpo* are famous for their succulent and juicy flesh. *Sugpo* dishes are considered specialty in most seafood and native restaurants in the country. This commodity has a large market, as evidenced by its constant demand.

In the early 90s, the prawn industry suffered major losses from a bacterial disease called *Vibrio*, which especially hit Northern Mindanao, the country's leading supplier of tiger prawns. Most of the prawn farms went bankrupt and had to shut down.

After the *Vibrio* scare, the prawn industry re-established itself by investing more on safe fishpond management and culture techniques. Some of these techniques include the use of antibiotics, regular cleaning and drying of the ponds, use of disinfectants, and adding probiotics and nutritional supplements.

However, these techniques are not practical in an extensive culture system which is the common practice in many coastal areas in Region 10. An example is Misamis Occidental which has a total area of 1,790 hectares for prawn culture and contributes 88% of the total prawn produced in the region.

Most prawn farmers prefer extensive prawn farming since it is cheaper to maintain and the prawns subsist on locally available food such as trashfishes i.e. *agihis*. Extensive prawn farming does not use feeds and chemical inputs that are harmful to the environment. Unfortunately, extensive prawn farms are not safe from the *Vibrio* disease.

To address this problem, Mr Perlito Vallejos and Ms Gigi Albor of the Bureau of Fisheries and Aquatic Research Region 10 (BFAR R-10) developed a new and cheaper method of controlling the disease in extensive prawn farms. The new method uses saline-tolerant *tilapia* to increase algal bloom and make the water safe from diseases like *Vibrio*.

It is said that slime from *tilapia* contains substances that promote the growth of certain microalgae while inhibiting the infectious *Vibrio* bacteria. These microalgae or phytoplankton are eaten by the *tilapia* and makes the water green hence, the term "Greenwater technique".

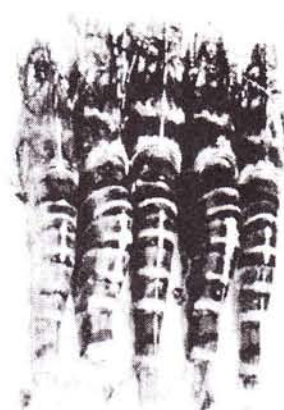
This technique promises more

profit. The three demo farms showing this technology that were established by the researchers had high percentages of Return of Investment (ROI) at 126%, 181% and 251%. Ponds without *tilapia* had very low ROIs (at less than 50%). Better quality prawns which were sold at higher prices were harvested from the first three farms. These results are very encouraging for all prawn growers and other business entrepreneurs.

In fact, the greenwater technique may well set the trend for polyculture in prawn farming and may become an initial step towards a sustainable prawn industry not only in the region but throughout the country. For all *sugpo* lovers, the

greenwater technique may well be our ticket to more gastronomic rides in the future ■

(Source: Greenwater Treatment in Enhancing the Production of Tiger Prawn (*Penaeus monodon Fabricius*) in Extensive Ponds by Mr Perlito Vallejos and Ms Gigi C. Albor of DA-BFAR Reg. 10, Cagayan de Oro City, Tel no. (052)484-6686; Won the AFMA Outstanding Paper Award 2001, Fisheries and Marine Science Unpublished Category)



Cadang-cadang: a misunderstood disease

■ Junelyn S. dela Rosa

Popularly known as the "tree of life", coconut (*Cocos nucifera*) today is fast becoming a very sick tree. In 1998, Brazil was the first to ban desiccated coconut from the Philippines. Other countries such as Saudi Arabia, Malaysia, and Taiwan followed suit years later. These countries were concerned that the coconut products that we were selling had the dreaded *cadang-cadang* disease. They promised to lift the ban only when the Philippines is certified free from the disease. This is a very stringent condition and would probably take more than a few years since *cadang-cadang* is still present in some parts of the country.

The disease is common in the Bicol region, in some isolated areas of Quezon and Aurora provinces, in Maripipi Island, Biliran and in Northern and Eastern Samar. Mindanao however, is free from *cadang-cadang*. Quarantine measures are already imposed by the Department of Agriculture (DA) to contain the disease.

The disease is caused by a viroid called "coconut *cadang-cadang* viroid" or CCCVd. Viroids are smaller than viruses and can multiply even at relatively high temperature (35°C). It is transmitted through infected pollen and seed and contaminated farming tools such as the scythe. At present, no coconut varieties are resistant to this disease.

A recent study by two scientists from the Philippine Coconut Authority (PCA)-Albay Research Center tested the various coconut products for *cadang-cadang* using the molecular hybridization assay (MHA). They found that products made from coconut meat and coconut

water do not have the *cadang-cadang* viroid and are therefore safe to eat. These products are: desiccated coconut, coconut powder, coconut slices, *makapuno* jelly, nata de coco, vinegar and wine. Scientists recommend that these products and other coconut products be exempted from the import ban.

They also tested how long CCCVd will survive in young and mature nuts that were stored at room temperature. CCCVd survived for two weeks in young nuts, while it survived for only a week in mature nuts. These results are significant since it is the mature husk that is processed into export products such as coir fiber and coco peat. The threat of exposing other crops to the pathogen is therefore impossible since CCCVd could not survive the processing of husk into coco peat. Coco peat is used as mulch or fertilizer.

This study only shows that *cadang-cadang* is a very misunderstood disease. It has been four years since our neighbors stopped buying coconut from us. It is about time that somebody corrects the error and makes way for our coconut in the international market. It is not too late for the Philippine coconut to regain its title back ■

(Taken from the study "Determination of CCCVd Contamination in Unprocessed/Processed Coconut Export Products" by MJB Rodriguez and LP Estioko of the PCA-Albay Research Center which won the AFMA Outstanding Paper Award 2001, Crops Science Unpublished Category. You may contact them at (052)484-6614.)

Boss Rolly tells his story

■ Maria Rowena SA Briones

The recent recipient of BAR Award of Recognition knows agricultural coordination as he knows the palm of his hand. He is Rolando V. Labios, or 'Boss Rolly' for those who know him. Asked how he became such, he said, "I have to tell you my life."

Boss Rolly picked fruits, tennis and golf balls to earn for his *baon* when he was in high school. He worked as farmhand after his graduation then moved on to the University of the Philippines at Los Baños (UPLB) to pursue a degree in Agriculture.

Armed with only his dreams, he prodded on despite difficulties. "If one is truly committed he could finish the work and carry it well." Working as student assistant, he learned independence and commitment. After graduating in April 1972, Boss Rolly was hired as researcher and extension worker for the Multiple Cropping Extension Pilot Project of the Department of Agronomy at UPLB.

Boss Rolly supervised the multi-cropping activities of 120 farmers in Sta. Cruz, Laguna. "I recorded and absorbed the farmers' experiences in the application of multi-cropping techniques. And more than that, I understood the farmers' views and problems." For this, he was awarded as an Outstanding Multiple Cropping Specialist by the provincial government of Laguna.

After three years, he was promoted as the project leader of farming systems pilot projects in Laguna, Batangas, Nueva Ecija, Iloilo and Camarines Sur. "As supervisor, I had to show the researchers and technicians that I am sincere and dependable so they will accommodate me and believe in what I say," Boss Rolly related. He added that he kept in mind what his professor in extension taught him: be professional and do your work to earn the trust of farmers and technicians.

Boss Rolly moved on to become the Agricultural Research Coordinator and later on Farming Systems Coordinator for agricultural development projects of the National and Agriculture and Fisheries Council, the Department of Agriculture and the International Rice Research Institute-Asian Rice Farming Systems Network.

No less than the then Director of

SEAMEO Regional Center for Graduate Study and Research in Agriculture, Dr. Arturo Gomez, who recommends him to extension workers and researchers as a resource person on the characteristics of regions in the country: the people, the environment, and the existing networks.

Boss Rolly clarifies that this extensive knowledge sprung from his direct contact with the regional directors, research coordinators, field researchers and agricultural technicians from regional to municipal level.

He established rapport by making government workers and farmers alike feel important. "I know who among the regional directors are cooperative, where the research sites are, and what problems recur there. For the last 20 years, I was in-charge of coordinating and establishing the networks. I like travelling except the fact that I would often be away from my family."

When the Bureau of Agricultural Research was officially established and someone to head the Research Coordination Division was needed, Boss Rolly edged candidates with doctorate degrees. The rest is history. From heading the senior technical core staff of BAR, he has become a respected chief of the Institutional Development Division (IDD).

May Maguyon, a science research specialist and IDD staff says, "Boss Rolly succeeds in maintaining a good relationship with his staff and IDD clients. He commands the discipline needed to get the job done efficiently."

Jo Anne Pamplona who has worked at least three years with Boss Rolly added that, "He is open minded. He believes in our capabilities to do our work independently and yet he is always ready to assist us." Boss Rolly's staff claim that he is the *hiraman ng bayan* of everyone.

Boss Rolly has come a long way from climbing trees and picking up tennis balls. Even he is amazed at how he had realized almost all his dreams. "At my age, I had achieved most of what I dreamed of. I am not aspiring for a higher position anymore. I like the flexibility being in the middle—you can go up and you can go down. You facilitate, lead and follow at the same time. What I aspire



now is improvement of my present situation in terms of knowledge and relationship with God and other people."

Having a happy and stable family and a fulfilling job is what Boss Rolly considers his greatest achievements. "I rose from a technician to a specialist in farming systems. I will always be grateful for what I learned along the way, how it made my perspective wider. I learned to be flexible and to be open. Every problem has a solution and every person has something to say."

"Boss Rolly listens to us and practices what he preaches," Architect Edgardo Abesamis, another IDD staff averred. Indeed, Boss Rolly withholds his judgments until he is able to view the whole picture. "I try to consider all aspects before I offer solutions. You can approach a problem in many ways so you have to be familiar with your weaknesses, and strengths," Boss Rolly answered when asked how he administers his job.

He also gives his staff opportunities to grow and learn. May Maguyon attests to this, saying, "he has respect for our capabilities and ideas and genuine concern for our well-being."

Boss Rolly describes himself as a silent person. He prefers not to be reactive because he is conscious that a person who does not think twice about what he's going to do or say is bound to make more mistakes. For this reason, he said that he rarely joins in arguments.

For those who are young and just starting to build a career, Boss Rolly offers this advise, "you have to have faith in God and in yourself. Do what you have to do and do it well. You earn the trust of others this way."

Ulat sa Bayan 2001

NTLs report some promising and mature technologies

And so our farmers and fisherfolk would ask, "what has R&D done so far to make our lives better?"

The *Ulat sa Bayan*, a 30-minute report on the performance, prospects and directions of the Agriculture and Fisheries R&D held during the Farmers-Fisherfolk Day as part of the R&D Week celebration on 2-5 October 2001 could partly provide the answer. Five national team leaders (NTLs) presented their report before the crowd composed of researchers, extension workers, farmers and fisherfolk.

The NTLs who presented during their report were: Dr. Leocadio S. Sebastian (rice), executive director of the Philippine Rice Research Institute (PhilRice); Dr. Rene Rafael C. Espino (mango), NTL for banana sub network and UPLB professor; Dr. Rodel G. Maghirang (vegetable), University of the Philippines at Los Baños (UPLB) university researcher IV; Dr. Crispino A. Saclauso (aquaculture), University of the Philippines, Visayas (UPV) associate professor; Dr. Eliseo P. Cadapan (crop protection), UPLB professor; and Dr. Teresita M. Espino (biotechnology), UPLB professor.

Rice



Dr. Sebastian introduced some of the rice varieties to make the farming system simple and profitable. He said that before there were no modern varieties specific for rainfed, cool-elevated and saline areas that are available to farmers, thus making their yield low.

Through the aid of research, there are now 15 varieties for rainfed areas that could produce 2-4 tons of rice per hectare; five varieties for cool elevated areas that could produce 3-4 tons/hectare and; six varieties for saline prone areas that could produce 2-3.5 tons/hectare. The two well-known varieties are the *Matatag* which is a stop gap variety for tungro and *Hybrid Rice Mestizo* which is a hybrid rice that produces good quality yield.

In terms of equipment, the farmers could now avail of the latest machineries for an effective and efficient land preparation. Among these machineries include, *PhilRice Rototiller*

that can till two hectares of land in a day and the *Microtiller Super Kuryat*, which is suited for terraces. Others are the *PhilRice Leveller* that could adjust with depth of hard pan and the *Disc-based Side Plow* that enables plowing the sides of field.

Dr. Sebastian cited some products that will soon be available to further ease the lives of our farmers. These include the super rice, golden rice, GM rice, hybrid rice and new plant type, which are water and nutrient efficient.

Fruit



How to further penetrate the world market and the latest breakthroughs in the mango industry are the main focus of Dr. Espino's report. The country's per capita consumption for mango has increased by 6.24% for the last seven years and the industry registered an annual contribution of P12.5B per year to agriculture. Among the breakthroughs he cited were the new strain of carabao mango, the new cultural management system that can be used to increase the production of mango, innovative procedure to identify mango seedlings, controlling major pests through IPM, extending shelf life, and tissue culture.

Vegetable



To resolve the low production of vegetables, Dr. Maghirang introduced some of the improved varieties of eggplant and tomato. He introduced four varieties of eggplant: *Mestisa*, *Mara*, *Arayat* and *Concepcion*. Tomato is another important crop but due to its low production during off-season, pricing of produce becomes unstable. Answering this problem, four off-season varieties were introduced: *S601*, *S610*, *S611*, *T617* and *XTH617*.

Dr. Maghirang also presented the importance of organic vegetable production, a system based on the principle of taking care of nature and respecting all life forms. This agricultural practice is health-wise and cost-effective since it does not use synthetic chemicals. The vegetable network through the Institute of Plant Breeding (IPB) has already identified 11 kinds of vegetables suitable for organic vegetable production.

■ Rita T. dela Cruz

These include eggplant, pepper, tomato, cauliflower, cabbage, lettuce, string beans, bush beans, cowpea, Baguio beans, and bunching onions.

Another technology introduced was *SNAP hydroponics*, growing plants without soil. It is a low-cost, simple system developed primarily for household and backyard vegetable growers. He emphasized that this technology is suited mainly for urban setting but it can be expanded to commercial scale for high-value and traditionally-grown vegetable crops.

Crop Protection

Dr. Cadapan presented various crop protection problems that are



currently facing the farming industry and how these problems could be resolved through some innovations/technologies. The rice black bug, the insect that attacks rice plants can now be controlled with the use of biocontrol agents, namely the *metarhizium* and *telenomus*. Dr. Cadapan also introduced another solution which is the use of light traps. Another menace is the ricefield rat which can be effectively reduced (if not totally abolished) using the *trap-barrier system* with trap crop. The diamondback moth common in crucifers can be controlled with a fungal bio-insecticide, *metarhizium*. He also emphasized that these technologies are now available for farmers use.

Biotechnology



Dr. Espino presented new ag-biotech products that are being developed at the IPB. Through tissue culture, gene cloning, genome mapping, marker-assisted breeding and diagnostics, the ripening trait of important fruit crops like papaya and mango are delayed. Through these techniques and procedures, scientists were able to develop papaya with ring spot virus resistance, banana with bunchy top virus resistance, coconut with modified fatty acid composition and corn with resistance to corn borer ■

BAR gives awards; Cong Abad receives *Gintong Butil*

In the continuing effort to recognize the contribution of the different sectors in R&D, the Bureau of Agricultural Research (BAR) awarded plaques and certificates of recognition to members of the Senior Scientists Advisory Committee (SSAC), BAR scholars, DA scientists and BAR outstanding employees for the year. The awarding ceremony was one of the highlights of the week-long R&D celebration held on 2-5 October 2001.

Hon. Florencio B. Abad, representative of the lone district of Batanes and former chair of the Appropriations Committee, House of Representatives graced the occasion. Aside from being the keynote speaker of the event, he was also the lone recipient of the *Gintong Butil* Award. The award was given in recognition of his strong support to the goals of BAR

and concern for the development of agriculture and fisheries in the country while he was chair of the Appropriations Committee, House of Representatives.

The award was handed over by BAR Director Eliseo R. Ponce and Asst. Dir. Nicomedes P. Eleazar.

The senior scientist awardees were: Drs. Fernando Bernardo, Solita Monsod, Gelia Castillo, William Padolina, Florendo Quebral, Ernesto Rigor, Cecilio Arboleda, Angel Alcala, and Felipe Medalla. The SSAC is a group of senior experts and eminent scientists created by the Department of Agriculture (DA) through BAR to ensure the smooth operation of the National RDE system in accordance to the Agriculture and Fisheries Modernization Act (AFMA).

For its employees, BAR awarded plaques of recognition to three

outstanding division chiefs for their valuable and dedicated service that remarkably contributed to the growth and development of the Bureau. They are Ms Cecilia J. Baquireza of the Knowledge Products and Services Division (KPSD), Ms Carmencita V. Kagaoan of the National Programs Division, and Mr. Rolando V. Labios of the Institutional Development Division (IDD).

Also, four staff were awarded as BAR Outstanding Employees of the year. They were: Ms Lyn D. Pardilla (Office of the Director), Best Permanent Support Staff; Ms Mary Agnes S. Sastrillo (National Programs Division), Best Permanent Technical Staff; Ms Magdalena M. Calimutan (Supplies), Best Contractual Support Staff; and Ms Ruvicyn S. Bayot (National Programs Division), Best Contractual Technical Staff. (Rita T. dela Cruz)

Metarhizium: the mighty fungus

■ Mary Charlotte O. Fresco



Many people associate fungus or molds to various health and food problems. Since, fungus is almost present everywhere, it is widely considered as

the culprit for many animal and human diseases and infections. However, several studies on the "other use" of fungus conducted by scientists and biologists worldwide prove that not all fungus are harmful. In fact, fungus could be used to effectively control insect pests in crops; one good example is the *Metarhizium anisopliae*.

What is Metarhizium?

Metarhizium, also known as "green muscardine", is a fungus that kills major insect pests such as diamondback moth, cabbageworm, Asian corn borer, coconut beetle, mango leafhoppers, rice black bug, oriental migratory locust, and nematode. It is

available in powder or oil formulation.

How does Metarhizium work?

Metarhizium attacks insect pests with its green spores. Once these living spores get in contact with the insect's skin, they germinate and start to penetrate the insect's blood vessels. The fungus then invades the insect body cavity, producing toxins that cause body paralysis. The infected insect dies in two days. Then, the fungus that develops on the surface of the dead insect's body initiates a new round of infection for other insects. This remarkable chain reaction makes insect pest annihilation happen at a fast rate.

Advantages of Metarhizium and how to use it

One inherent quality of fungus is its ability to grow and multiply rapidly. One preparation of *Metarhizium* contains 2.5 trillion spores - just enough to treat a hectare of cropland.

Since *Metarhizium* multiplies by itself, one planting season only

GMA...

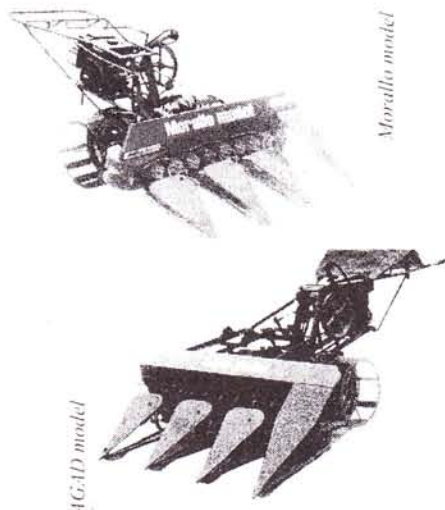
technology to the President, adding that he expects valuable information regarding new technologies, new seeds, and seed buyers to be readily available through the AFRDIS.

The AFRDIS is a comprehensive information system for R&D in agriculture and fisheries. It acts as a single language for R&D information and promotes knowledge exchange and dissemination across R&D institutions. The AFRDIS was established by BAR and involves other major players including the Department of Agriculture, Department of Science and Technology, national R&D centers, state colleges and universities, DA regional centers, and private R&D institutions.

The conference was followed by a symbolic turnover of the most exciting and recently developed technologies generated by scientists in agriculture and fisheries to President Arroyo. Among these were the *metarhizium* - a biological control agent against crop pests such as the diamondback moth, Asian corn borer and coconut beetle; Bio-N - a cheap and effective fertilizer supplement; six new varieties of coconuts; and the *SNAP Hydroponics* technology - growing vegetables without soil. The turnover signified the importance of disseminating the new technologies to the intended users and promoting their use.

The launching is the highlight of the Farmers-Fisherfolk Day that is part of the 2nd National R&D Week celebrated on 2-5 October 2001. (Thea Kristina M. Pabuayon)

Making rice harvesting easy with locally manufactured reapers



For centuries, Filipino farmers have been using the sickle to harvest rice. However, this traditional practice, though reliable, takes up too much time and is drudging work. In 1980, the International Rice Research Institute (IRRI) and China jointly developed the first reaper-windrower design for developing countries and released it locally. This technology finally mechanized the otherwise back-breaking manual harvesting labor of farmers in the Philippines.

Five years later, Japan introduced the *Kubota AR120 Rice Reaper* to the farmers in Bataan. However, not everybody was happy with this new reaper that was far superior and modern than that of IRRI. The laborers saw it as a threat to their livelihood. After all, the mechanical reaper could harvest much more than they can at half the time. Also, it costed too much at P140,000 per unit. Lastly, it cannot harvest lodged crops and still requires manual reaping of field corners. Despite these constraints, the *Kubota* reaper replaced the locally manufactured ones in labor-deficient areas and is widely used in some Philippine areas in providing custom services, and was popular in Bataan.

For reapers to be popular among farmers, we need to have a cheaper and more locally adaptable model that is simple to use, can be made out of locally available materials, easy to manufacture, and light.

Scientists from the Philippine Rice Research Institute (PhilRice) and the Japan International Cooperation Agency (JICA) collaborated in this project. From an advanced prototype, they designed and tested the new PhilRice-JICA rotary reaper-windrower system developed specifically for local rice harvesting.

The PhilRice-JICA team prepared

two models in close collaboration with two cooperating manufacturers: the Morallo Reaper (named after Morallo Industries in Iriga City) and the AGAD Reaper (from the C&B Crafts in Bulacan).

The Morallo Reaper was patterned after the advanced prototype and uses the same system for cutting, windrowing, transmission etc. The AGAD model, however, not only incorporated the features of the advanced prototype but also added features from the *Kubota* reaper. The reaper therefore has the transmission system and skeletal power tiller of the advanced prototype and the conveyor system of the *Kubota* reaper.

The two models were tested by farmers and were also brought to Bataan where the *Kubota* reaper was popular. Several modifications were then made based on the farmers' and manufacturers' feedbacks such as: modification of the starwheel to lessen straw clogging; rubber cagewheels for handling wet and dry soils; twisted belt transmission system for reduced noise level; and adjustable handle to fit the operator's height, etc.

Based on field performance, the *Morallo Reaper's* performance is already comparable with that of the *Kubota* model. It attained complete cutting and orderly and neat windrowing. Moreover, the farmers were able to harvest weedy fields with soft

soil condition, as well as crops shorter than 50 cm.

In terms of costs, the locally developed reaper was found to be more economical than the imported design. Since the *Morallo Reaper* costs only P65,000 per unit, the farmers incurred a total harvesting cost of P1,673/ha only as compared to P1,995/ha using the imported model. Also, the breakeven point for the PhilRice reaper is 37 ha/year compared to the usual 83 ha/year with the imported reaper.

Because of its low cost, simple design and innovative features such as the reverse motion, ability to work in soft soil conditions, adjustable cutting height, and higher reaping capacity (due to increased cutting width and higher forward speed), the PhilRice-JICA reaper is sure to be a hit not only among local farmers but also other Asian countries dependent on imported reapers ■

(Based on the paper: The PhilRice-JICA Rotary Reaper: Re-engineering a Modern Technology for Filipino Farmers and Manufacturers presented during the 13th National Research Symposium on October 2001 and winner of the AFMA Outstanding R&D Paper Award for Physical Science (Midstream/Downstream) Unpublished Category. For complete information, please contact Dr. Eulito U. Bautista at the National Rice Engineering and Mechanization Center, PhilRice, Maligaya, Muñoz, Nueva Ecija, Tel no. (044)456-0354)

BAR...

Biological Sciences for the Animal Science Upstream Title, Orville Bondoc et al. of UPLB-Institute of Animal Science for the Animal Science Midstream/Downstream Title, Eulito Bautista et al. of Philippine Rice Research Institute (PhilRice) for the Physical Science Midstream/Downstream Title, and Glenn Aguilar et al. of UP Visayas for the Socio-economics Title. Each winner received P20,000 and trophy.

The DA Secretary's Award under the Published Research Category for the Crops Upstream Title had nine winners from UPLB, each bagging P10,000 plus plaques. The winners for the Physical Science Title in the same category were the Department of Science and Technology-Food and Nutrition Research Institute (DOST-FNRI), Visayas State College of Agriculture (ViSCA) and DA-RFU 7 who bagged P50,000 each plus a plaque. Six Southeast Asian Fisheries Development Center (SEAFDEC) researchers won the Fisheries Title of the same category, bagging P40,000 each plus a plaque. All winners of the DA Secretary's Award were

published in an Institute of Science Information-Current Content Journal.

For the BAR Director's Award, winners were divided into two categories: those published in local refereed scientific journals and those published in international refereed scientific journals. UPLB (two awards), PhilRice (two awards), ViSCA (one award), and Bureau of Postharvest, Research and Extension (BPRE) (one award) got P20,000 for each research award plus a plaque.

From these category winners, three were chosen for the Best Poster Award. The winners were *Indices for Varietal Identification of Mango* (UPLB), *Diagnostic SSR Markers for Hybridity Testing of PCA* (UPLB), and *Determination of CCCVD Contamination in Unprocessed/Processed Coconut Products* (PCA-Albay).

The NRS is held annually to promote research excellence in agriculture and fisheries. It is open only to Filipino researchers and scientists within the National Agriculture and Fisheries R&D System. (Thea Kristina M. Pabuayan)

Web NEWS

New movement among farmers to give up the plow takes root across Asia's bread basket

<http://www.futureharvest.org>

Germs in meat stir debate on livestock drugs

<http://www.cnn.com/health>

Cheaper calcium sources just as nutritious

<http://www.cnn.com/health>

Experts warn consumers on low quality food products

<http://www.cnn.com/health>

Filipino addresses lack of potable water

<http://www.dost.gov.ph>

PCIERD promotes S&T fora and competitions in the region

<http://www.dost.gov.ph>

Metarhizium...

requires three applications as compared to chemical pesticides that need to be applied five to six times.

Metarhizium is also cheaper than chemical pesticides. A farmer would only have to spend P250 per hectare compared to chemical pesticides which cost around P800 to P1,200 per hectare.

Metarhizium is commonly applied through spraying, which should be done late in the afternoon because the active spores are killed by direct sunlight.

Unlike chemical pesticides, *Metarhizium* does not leave any residue on the crops that may be harmful to human health. Also, it does not harm animals and beneficial insects such as bees, insect predators and spiders.

How do we grow *Metarhizium*?

A group of researchers headed by Dr. Dante Santiago of the National Crop Protection Center (NCPC) in UP Los Baños has developed an efficient method of

BAR strengthens PGR R&D

The Philippines is one of the Southeast Asian countries to pioneer in plant genetic resources (PGR) R&D. PGRs provide raw materials for breeding new varieties of crops that can better adapt to our environment's changing conditions. However, due to dwindling investments over the years, the country's pace in this discipline slowed down.

But through the support of the Bureau of Agricultural Research (BAR), PGR is picking up speed again. Recently, BAR held the "Workshop on PGR Acquisition, Characterization, Conservation, Regeneration, Documentation, and Utilization" in collaboration with the Bureau of Plant Industry (BPI), and UP Los Baños (UPLB). The event was held at the Institute of Plant Breeding (IPB), UPLB, College, Laguna on 15 October 2001.

In his keynote speech during the workshop's opening program, BAR Director Eliseo R. Ponce stressed the need of putting more investment in PGR. "Unless we put more effort to PGR conservation and utilization, it will be the

case of *nauna sana, nahuli pala*," Dr. Ponce averred.

"*Yan ang istorya sa Pilipinas, palaging una, pero sa kahulihan, nauunahan siya ng iba*," he continued, pertaining to the country's being overtaken by neighboring countries in terms of advancements in PGR technology.

With the Arroyo administration's increased budgetary allocation in agriculture, there are imminent possibilities of likewise channelling more resources to strengthen PGR R&D. Dr. Ponce vowed support to IPB, being the leading institution in PGR research, consequently one of the lead agencies in the national RDE PGR network.

Dr. Ponce likewise guaranteed sufficient resources for manpower development at UPLB to ensure the sustainability of the project. Human resource development, he said, is critical in developing a mass of trained and committed researchers.

"Our business is agriculture and fishery research. We want to develop products, but a new factory in this modern world does not necessarily have its own factory, so we outsource our services. And we can only get the best value for our money if the services provided for our partners are up to the standards of what we call new-age."

In concluding his message, Dr. Ponce encouraged the participants to be instrumental in building a stronger institution out of IPB. "A strong IPB... is central to the interest of the Department of Agriculture especially to BAR," he remarked. (Laarni C. Anenias)

growing *Metarhizium* fungus. The fungus is grown on boiled corn until spores germinate and are fully developed in about a week. The spores gathered are air dried and later stored in a freezer. The formulated fungus (powder or oil) remains viable for more than one year ■

(For more information, please contact Dr. Dante R. Santiago or Dr. Eliseo P. Cadapan at the National Crop Protection Center, College of Agriculture, UPLB, Tel. No. (049)536-2410/0983/2409.)

BAR Chronicle

A bi-monthly publication of the
Bureau of Agricultural Research
3/F ATI Bldg., Elliptical Road
Diliman, Quezon City 1104



Department of Agriculture
Bureau of Agricultural Research

ISSN 1655-3942

BAR Chronicle

3/F ATI Bldg., Elliptical Road, Dilimam, Quezon City
Website: <http://www.bar.gov.ph> E-mail: rd@bar.gov.ph

Vol. 2 No. 20

A bi-monthly publication

16-31 October 2001

Int'l research orgs address global problems



Dr. John Bennett of IRRI speaks, discusses "New Science and Tools for Food Security and Poverty Alleviation" during the 1st International Agriculture Research Day.

Recent developments in science have brought new ideas in revolutionizing the agriculture and fisheries sectors. Unfortunately, many scientific researches become inoperative and useless because they are not utilized and brought closer to the farmers and fisherfolk for adoption.

As the struggle to solve two of the more pressing problems in the world--food security and poverty alleviation—continues, discussions on their extent have progressively become the major issue among talks, conferences and fora.

Focusing on the beneficial aspects of different scientific researches, specifically new technologies that may solve food insecurity and alleviate poverty in the country, scientists and researchers must double their efforts to end these global problems. This was the main agenda of the 1st International Agriculture Research Day on 3 October 2001 which was part of the National R&D Week. Five renowned scientists from different international

scientific institutions based in the country presented their papers following the theme, *New Science and Tools for Food Security and Poverty Alleviation*.

Among these international scientific institutions are: the International Center for Living Aquatic Resources Management (ICLARM), the International Livestock Research Institute (ILRI), the International Rice Research Institute (IRRI), the Center for Agriculture and Biosciences International (CABI), and the International Plant Genetic Resources Institute (IPGRI).

ICLARM: The world fish center

One of the 16 centers under the Consultative Group on International Agriculture Research (CGIAR), ICLARM has set food security as its mission, with poverty eradication as its guiding principle for research. With great emphasis on small scale fisheries in the developing countries, it provides new knowledge

■ Rita T. dela Cruz

made freely available and useful to poor people.

According to Dr. Boris Fabres, scientist and network coordinator of ICLARM, the Philippines has an active and strong partnership with ICLARM in terms of project implementation. In a review of ICLARM's activities, it was noted that there are already 41 projects involving different locally-based institutions such as the University of the Philippines. Such partnerships heighten the country's international ranking in fish production, the Philippines being twelfth in the world.

The value of such partnership as Dr. Fabres reiterated, lies on multidisciplinary considerations and the need for efficient decision-making. This of course is in recognition of the macroeconomic

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Sciencescoping

■ VA Duldulao

Of flowers and potatoes

We are in search of flowers and other ornamentals for our **BAR Today** last quarter issue and we think of documenting as many as we can for our photo files. Baguio is our destination.

As soon as we reach the Benguet State University (BSU), at three o'clock in the afternoon we look for Dr. Rogelio Colting, the research director and vice president for research who is our contact person. He is presently lecturing in one of the rooms at the Training Center but a staff of his welcomes us and accompanies us to the office of Dr. Cip Consolacion, the University president.

We buckle down to work or else the three-day trip, inclusive of travel time, is not enough to do all the things we want to do. We move to the anthurium research area. Tony, using his SLR, and Charlotte with her digital camera have their fill of shooting the newly harvested flowers including those of the newly developed varieties by Dr. Araceli Ladilad, the anthurium researcher.

At 4:30 A.M. the following day, we now wait for our guide in front of the Training Center where we are billeted. Drs. Roger and Lita (we were housemates while working for our graduate program at UPLB, she occupies another high position in the university) are our guides. Through a winding and narrow road that skirts along mountain sides, they lead the way to Bahong, La Trinidad, the rose capital of the country. They want us to see how the flowers are prepared for the market by a cooperative. But by the time we reach the place, the flowers are already packed in styrofoam boxes and are now being loaded into trucks for Manila.

To a keen observer, the structural transformation of the area - big and beautiful houses, FX taxis you wouldn't expect in the mountains and uniformed students - could be attributed to the flowers. How could such beautiful flowers transform a mountainous place into a progressive one? We get the answers after knowing their volume of production,

how much a bundle of roses costs and other economics. And the cemented roads surely contribute to the progress. One thing more, we are looking into Japanese features among those we talk with. Again, we get the answer even without asking when it is explained to us that there are Japanese progenies in the community. Their relatives in Japan who came looking for them long after World War II constructed the cemented roads to link their forebears to the city.

A cooperative was formed by the villagers and now serves as the marketing arm of the village. A cold storage for flowers has been donated by government and even a JICA Building has been provided to the flower farmers. And just to find out how cold is 12°C, we stayed inside the cold storage for some minutes. My! It's really cool to keep the flowers last for two weeks before they are sold.

And now to the magnificent King Louis Farm with appointment at 9:00 A.M. We are accompanied and brought around by no less than the very accommodating and generous Mr. Efren Chatto, the president of the corporation. There is an inexplicable feeling when all around you are flowers, flowers, flowers of different kinds, vibrant colors, shapes and sizes, other ornamentals and plants whose foliage are used for different arrangements and occasions. All that we can do is to thank the Creator of the beauties around and wish that we do not go back to the polluted city with milling and rushing mechanistic crowd.

An economist by profession, Mr. Chatto becomes a horticulturist, agronomist, entomologist and plant pathologist as he briefs us about the plants. And he knows the name of each plant, from poinsettia, to mums, roses, orchids, lilies, etc. He tells us that nearly all the planting materials are imported. Considering the area and extent of the farm's operation and that the plants are roofed, we presume King Loius is spending a

huge amount. But considering, too, the market and the volume of production, we also estimate that the farm also gets a fortune. He gives us a figure and we gasp.

There is an increasing demand for flowers which implies that a sector of our society is becoming aesthetically inclined. Another indication of this aesthetics is a space at the malls selling imported flowers at prohibitive prices. I tended to believe then that the flowers labeled with the name of the flower and the country source are really imported only to find out that King Louis Farm is also growing those flowers.

The day is not yet over for us. We visit the chrysanthemum tissue culture project of BSU but it is a brown-out hour and so we have difficulty peering into the tissue culture bottles in the laboratory. According to the staff, the University started the chrysanthemum industry in Baguio and it is going assist its growth through its tissue culture. We follow through from lab to seedling production. I keep

see *Of flowers*, page 6

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Profile

Dr. Obien and PhilCorn

■ Ma. Rowena SA Briones



Dr. Santiago R. Obien, the builder of the Philippine Rice Research Institute (PhilRice), considers it an irony that corn, second to rice as the country's major staple food, is the most neglected commodity in terms of research allocation.

He said that it should be a cause for alarm that what used to be golden fields of corn is not so golden anymore. With the onset of trade liberalization, more and more people consume imported corn. Even livestock and poultry now have imported corn mixed in their diet.

"Our yields are low and land for corn production is decreasing as income from farming corn had grown smaller," Dr. Obien confirmed. Indeed, other crop substitutes such as wheat have also impinged on the market share of corn.

With passion, he reiterated, "producing more corn is important because it is unhealthy for our economy if we import something that is one of our major staple food and one of the main ingredients of what we feed our livestock and poultry."

The challenge, he averred, is to establish the Philippine Corn Research Institute (PhilCorn) so that the corn industry, like rice, will have a strong research and development base. With Dr. Obien as its interim executive director, PhilCorn aims for sustainability in research, development, and extension to improve the yield and quality of corn while reducing production costs.



Not that there have not been previous efforts to do research and generate technologies that corn farmers can use, it is just that these efforts should be unified for the corn R&D system to be more effective and efficient, Dr. Obien remarked.

PhilCorn is on its infant stage, with planning and networking being done

steadfastly. "The only constraint right now is funding, right now we only have P200,000 but notable developments have already taken place. The University of Southern Mindanao (USM) committed 60 hectares of their land for the PhilCorn building and experimental farm. We will share facilities with them," Dr. Obien said.

A USM building will temporarily house the Institute while awaiting the release of funds from the Grains Sector Development Program (GSDP). Dr. Obien added, "We are expanding the motorpool, acquiring equipment and improving the facilities of the network so that the implementation of the National Integrated Corn Research and Development Agenda will not only be at the Central Experiment Station but in the whole country as well."

This gray-haired man before me is described as one great institution-builder and now I know why. Like a child being taught how the earth goes around the sun, he said, "While infrastructures are necessary, more important are the people who will work there. Their training should be consistent with their roles. We have to send young people to school so that they can have a high level of

intellectual capacity. They are the ones who will implement the programs. The programs will generate the funds that will put up the infrastructure that will house and synergize research and development activities. These are the major requirements of institution building."

He shook his head with a 'tsk tsk' when I asked him how things are. He said, "In January, we will have our annual review. We will go over what we have done for the past year and from there will firm up our 2002 agenda and verify whether everyone can deliver. We will also discuss further how money will be used and accounted for."

As if letting me in a secret, he said, "We created PhilCorn to take advantage of what the GSDP provides so that after the money is gone, we have an institution." Wagging a finger, he warned, "An institution that is built now, is difficult to remove later."

Why are we working hard for PhilCorn? It's like an amazing arithmetic, we increase our corn production, we make the prices of food and feeds cheaper. We don't have to buy outside; we can narrow down our trade deficits. We increase the production of livestock and poultry, people can pay more taxes. Our economy will grow.

But Dr. Obien acknowledges that there are many reasons why farmers do not have access to technologies or they do not necessarily adopt the products of veritable researches that have been done. Solutions are as numerous and interrelated. He contended that, "It's not just physical or social researches and effective extension systems that can help solve the problems, some of the problems that befall the corn industry can be solved with the stroke of a pen."

But like corns that bloom where they are planted, R&D will do what it can to address these concerns. It doesn't mean we cannot do anything. Dr. Obien beams, "That's why we are building PhilCorn. We have done a good job in rice, we'll do as good or even better with corn." ■

GMA coconut has a lot to offer

■ Mary Charlotte O. Fresco

"Kung ano ang puno, siya rin ang bunga at kung ano ang itinanim, siya rin ang aanihin."

These Filipino adage may have no place in science, but scientists and experts from the Philippine Coconut Authority (PCA) found these lines perfectly appropriate to introduce a newly developed superior variety of coconut—the Genetically Multi-Ancestral (GMA) coconut farmers' variety.

A product of long time research and "untried" method of coconut breeding, GMA coconut farmers' variety possesses the characteristics which every Filipino coconut farmer hopes for. This coconut variety combines the outstanding agronomic qualities of four local traditional tall varieties (Laguna, Bago Oshiro, Baybay and Tagnanan) and two foreign tall varieties (West African and Rennel).

What makes this variety special and different from the traditional coconut varieties?

"GMA coconut farmers' variety yields higher, matures early, is more vigorous, and can be the best source of premium seeds for successive cropping," elaborated Mr. Carlos Carpio, national team leader for coconut RDE network during the *Ulat Sa Bayan* as part of the celebration of the Farmers-Fisherfolk Day on 05 October 2001.

Moreover, the researchers claim that this new variety possesses incomparable characteristics



that would help the country regain its title as the second largest exporter of coconut products in the world market. Among the outstanding characteristics is its ability to produce more and heavier nuts compared to traditional farmers' varieties. With GMA coconut variety, a farmer can harvest more nuts (52-88 nuts per palm) compared to old variety which usually bears 38 nuts per palm. When it comes to yield per hectare, a farmer can harvest an approximate of 7,700-12,000 nuts (2.7-4.1 tons), and only 4,000 nuts (1 ton) with the old variety.

According to Mr. Gerardo Santos, chief researcher of this study, PCA started nut samples distribution to coconut farmers in Region IX particularly in Zamboanga City last year to determine the suitability of the new hybrid to different geographical locations ■

International ...

structure in which aquatic resources are being used. Likewise, he emphasized the importance of alternative livelihoods and rights-based approaches that must be involved in dealing with precautionary and responsible methods in the use of aquatic resources.

ILRI: Benefiting from the livestock revolution

There are various constraints and problems in the animal production sector such as diseases, inadequate nutrition, resource degradation and challenging trade and policy environments.

The challenge for ILRI lies on finding the mechanisms for smallholder farmers to benefit from this sector by not only identifying technology options but to improve the trade and policy environment as well.

Dr. Cesar Sevilla, adviser of ILRI, said that they have developed a wide-ranging set of projects with their national partners in East and Southeast Asia focusing on many problems constraining livestock development. It has created research partnerships with national agricultural research centers in the region and with advanced international research institutes and donor agencies.

The Philippines is one the beneficiaries of this kind of cooperation and partnership, in particular, those projects with significant socio-economic benefits for smallholder farmers in improving the productivity of their livestock.

IRRI: The functional genomics and biotechnology of rice

"Improved seed is one of the best ways of delivering the benefits of scientific research to farmers and consumers."

Thus, was the main point of Dr. John Bennett, senior molecular biologist of IRRI, in response to the growing problem of food inadequacy and poverty. Bioscience, biotechnology and breeding should be the major points by which research should be prioritized, to be able to answer the needs of the consumers.

In a scenario whereby production of rice is not adequate to support more than 700 million poor in Asia, biotechnology offers ways of increasing the yield potential, yield stability, grain quality, nutritional value and input

ERP: Under investment hinders agr'l growth

Did you know that one of the major reasons for the weak agriculture and fisheries sector is that we have under invested in R&D during the last 20 years?

Bureau of Agricultural Research (BAR) Director Eliseo R. Ponce cited this issue in his paper "Issues of Modernizing the Agriculture and Fisheries Sector" presented during the second plenary session of the First International Conference on Agriculture Education and Environment at the Umali Hall, International Rice Research Institute (IRRI), 16 October 2001. The conference was organized by the Asia Pacific Association of Educators in Agriculture and Environment (APEAEN) and the Philippine Association of Agriculture Educators (PASSAGE).

Citing a World Bank study, Dr. Ponce said that developing countries

should invest at least 1% of its gross value added (GVA) in research and development. Compared to our neighboring countries, Thailand and Taiwan, which spend about 1.8% and 3.4%, respectively, of their value added in R&D, Dr. Ponce averred that our government has invested only a minimal 0.3% of its gross value added. "But," he added, "with President Arroyo promising more money, this figure should be increased to 0.55%."

According to Dr. Ponce, the big investment of these countries in R&D could be the reason why they now hold a critical mass of scientists, equipped with state of the art equipment and laboratories. "We are spending very little and we are not spending it in solving the right problems and cases," he continued. He recounted a period when the government was investing more on tobacco and cotton, while it neglected

corn and coconut.

Dr. Ponce, likewise, pointed out the following factors that need to be improved to create a modernized

agriculture and fisheries sector: irrigation, post harvest facilities, infrastructure (rural roads and transport), credit and financing, information and marketing assistance, product standardization and consumer safety, and human resource development. (*Laarni C. Anenias*)



More projects to benefit Muslim Mindanao

With the upcoming implementation of the project "Interregional Strengthening of Agriculture/Fisheries R&D Programs in Muslim Mindanao," the Bureau of Agricultural Research (BAR) has again invested its resources to help transform Mindanao into the "Food Basket of the Philippines". At present, Mindanao provides 44% of the country's food (www.mindanao.org). Being the second largest island in the country, Mindanao is endowed with vast tracts of land for agriculture and is a nearly typhoon-free geographic zone.

BAR's commitment in developing the agricultural potentials of Mindanao will start by year 2002 through community-based or on-farm research projects

in Cotabato, Lanao, Maguindanao, and the islands of Sulu and Tawi Tawi. These projects are expected to accelerate technology transfer in the Muslim area. These efforts will be matched by a new research-extension delivery and feedback system that shall take into consideration the unique conditions of the region.

A five-member Project Formulation Team (PFT), created under Special Order No. 234 Series of 2000, is tasked to formulate and recommend community-based and on-farm research projects responsive to the needs of the region. The team is composed of UPLB- and MSU-based technical experts on research and extension, inland fisheries, economics, soil science/farming systems and plant breeding.

Aside from identifying projects, the PFT is also tasked to address the issue of ownership, control and effective utilization of the RDE Center in Marawi, and the Germplasm Center for Tropical Fruits in Sulu. Moreover, the PFT identifies the key institutions to work with the DA regional research centers in these projects. The team determines the human resource needs of the concerned institutions.

The PFT is scheduled to start their Mindanao mission on the third week of December this year, while another mission is set on January 2002. The team is working with the Bureau of Plant Industry (BPI) in preparation for their upcoming deployment to the Muslim region. (*Carmela B. Brion*)

7 regions, 4 SCUs prepare for Corn R&D

Seven regions and four state colleges and universities (SCUs) are busy anticipating the implementation of the project "Strengthening the Integrated Corn RDE Network," a sub-component of the Grains Sector Development Program (GSDP) and approved for funding by the Asian Development Bank (ADB). This project was initiated by BAR in line with the Department of Agriculture's program to attain food security and alleviate poverty.

Representatives from DA-Regional Field Units 1, 2, 5, 7, 10, 12 and ARMM, together with researchers/academicians from UP Los Baños, University of Southern Mindanao, Leyte State University, and Central Mindanao University, participated in the workshop held at the ATI-NTC, UP Los Baños.

The workshop refreshed the participants on the objectives of the Corn Research project and also redefined the roles and responsibilities of the implementors in the regions. Dr. Artemio Salazar, project leader for the RDE programs, together with Dr. Santiago Obien, project leader for institutional development, presided over the implementors' presentation of the following information: equipment requirement, the list of personnel involved in the project, and the validated Corn RDE programs in each region proposed for funding under the GSDP.

Highlights

Equipment and human resource requirement

As early as February 2001, the involved DA regional research stations submitted their equipment requirement to the Bureau of Agricultural Research (BAR). Dr. Salazar mentioned that the equipment in the list would be prioritized in 2003, when the bulk of the project funds will be released. However, equipment specifications should be completed immediately and turned over to BAR as soon as possible. The Project Management Office shall

be responsible for the procurement of equipment on a centralized basis.

On human resource development, Mr. Rolando Labios, BAR's Institutional Development Division Chief, reminded the participants that the project's provision of scholarship, to take place in the coming years, are competitive in nature. Only the best, qualified personnel from the regions shall be accommodated. Criteria for the selection of scholars will be formulated soon to determine the qualified applicants for the degree and non-degree scholarship programs.

Processing of proposals for GSDP corn research/BAR funding

Majority of the participants suggested the creation of BAR's timetable for calling in proposals from the regions. They were reminded that proposals submitted should jibe with the budget cycle of the funding agency. Dr. Obien advised the group to get ready with an advance list of approved proposals in the region. In this manner, project leaders at the region can immediately



submit project proposals as soon as BAR gives the go-signal for submission.

Other Concerns

Since its conception, the Corn Research component of the GSDP is compelled to help uplift the state of the corn industry in the country. In doing so, this project entails effective coordination among the project implementors, research centers, corn farmers and the DA. Research and operations group of the DA in the region shall work closely together, particularly in terms of budget allocation.

Dr. Obien ended the workshop with these words to ponder on: "The challenge for the people involved in corn RDE is very fundamental – come up with the definition of corn farmers, corn field and marginal areas." The implementors in the 7 regions and 4 SCUs should have a clear focus in setting their goals for the corn industry. (Carmela B. Brion)

Of flowers...

wondering how the pinched top of the plant and even a leaf could develop roots and grow. Ah, the wonders of science and the determination of the scientists to come out with new ways of doing things! It is dusk and we call it a day.

Still wondering how the leaf of chrysanthemum could develop roots, we are brought to the potato project housed at the Northern Philippines Rootcrops Research and Training Center at 8:00 A. M. by no less than Dr. Colting once more. We are apprised with the projects on yam and other rootcrops. We learn about arrowroot as the source of powder because of its very fine starch and also as binder for lipstick; that the lipstick

which many women could not do without is full of chemicals that are toxic. Which do you rather have, toxins or beauty?

Yam or ube is in great demand but there is not enough supply. The University has encouraged farmers even at the lowland's to go into yam production to be able to meet the demand. Yam is commonly grown in small patches in the uplands or hilly land as an intercrop with other rootcrops, vegetables and other fruit crops. Its tubers are mainly used in making food delicacies such as jams, candies and ice cream or bakery product additives. BSU prepares this into its famous chilled yam, a favorite of many. Yam is a good source of protein and phosphorous.

The real essence of pure essential oils

■ Mary Charlotte O. Fresco

Purely organic. This seems to be the best way to describe the real "essence" of essential oils. Owing to the fact that these oils are purely extracted from various plant parts including flower, leaf, resin, bark, root, and seeds and undergo a sterile extraction process, the depth of its use cannot be underemphasized.

The use of essential oils can be traced back to the ancient Egyptian civilizations. Earliest historical accounts describe that essential oils produced from aromatic plants were primarily used for medicines, massage oils, perfumes, cosmetics and embalming preparations. Ancient Greek and Roman people valued these oils as "precious substance" for their "life-giving properties" that help relax, balance, rejuvenate, restore or enhance the state of body, mind, and spirit.

Today, the uses of essential oils have grown extensively. From bodily application (aromatherapy, massage oils, perfumes) to industrial use, the versatility of essential oil has brought promises and opportunities. Unknown to many, modern cosmetics, perfumes, soaps, and detergent use large amounts of essential oils. Food manufacturers use essential oils to blend some flavor and delicate scent to our daily beverages such as coffee, tea, juice, sodas and other liquors. Some use them as flavor extender to canned sauces, soups, bottled condiments, confectionaries, and other food products. Because of these applications, the demand of various industries worldwide for essential oil is remarkably increasing.

However, despite the fact that the Philippines being rich in essential oil-yielding plants, it imports 90% of its essential oil from Europe and United States in order to sustain our domestic requirement. These imported oils often command high price which cost an average of P100-165 per bottle.

In helping the country save and earn dollars from producing our

own essential oils, the National Institute of Molecular Biology and Biotechnology (BIOTECH) in UP Los Banos, Laguna has developed a technology to efficiently extract oils from plant materials using enzyme called pectinase. This enzyme when added to chopped pieces of plant parts facilitates the separation of oil from the plant fibers. This activity is hastened by adding some organic solvents such as ether and ethanol. This study is spearheaded by Dr. Teresita M. Espino, Bureau of Agricultural Research's national team leader for biotechnology R&D network.

Scientists revealed that this method significantly increased essential oil yields from patchouli leaves (an odorous herb with medicinal properties), citronella leaves, and ilang-ilang flowers to 1-3%. This yield is double compared to the oil yield extracted from

traditional methods. The researchers added that this technology is simple, economical, and safe.

Essential oil available in the local market is extracted through steam distillation. Since steam distillation involves the use of heat to "forcefully" extract the oil from plant parts, most of the active components in essential oils are destroyed. With the use of enzyme, no heat is involved, thus quality and stable extracts are produced.

With this technology at hand, coupled with continued support from the government, the country's vision to become a leading producer of essential oil for the world market is not hard to achieve ■



International...

efficiency of rice in the country.

IRRI has been adopting various biotechnological approaches to rice breeding - from traditional breeding in the 1960s to genomics (the study of the relationships between gene structure and the biological function in organisms and gene discovery) in 1998 and 1999.

From then on, such innovations have been proven to be beneficial as they 1) increase yield; 2) provide higher income; 3) lessen risk from drought; 4) make efficient use of aluminium-and iron-deficient soils; 5) provide better human nutrition; 6) lessen the exposure to toxic insecticides; and 7) increase diversification of labor.

IPGRI: Converging new science for countryside development

The idea is basically simple: "it is not modern science or traditional science that would substantially contribute to

countryside development, but the convergence of relevant and various sciences, both modern and traditional to bear on problem areas that need to be improved." This is the major point of Dr. Percy Sajise, regional director of IPGRI, in his paper.

IPGRI has been continually contributing a great deal to Philippine countryside development. Basically, the collaboration cuts across three aspects: coconut research, banana development program, and tropical fruit species.

IPGRI proposes that the use of such interdisciplinary and holistic approach with relevant sciences be implemented as a key instrument in attaining sustainable development in the Philippine countryside. Its experience in the use of complementary conservation approaches, especially *In situ* conservation for agrobiodiversity management could be of greater use in promoting the production and use of various important genetic materials ■

Web NEWS

Saving Africa's leafy greens
<http://www.futureharvest.org>

Will agriculture fall victim to AIDS?
<http://www.futureharvest.org>

Drugs quadruple life span of mice
<http://www.cnn.com/health>

With cool weather, less chance of E. coli
<http://www.cnn.com/health>

Ph33-M port inaugurated in Quezon
<http://www.da.gov.ph>

WTO successfully concluded negotiations on China's entry
<http://www.da.gov.ph>

Criteria in screening investments in palm oil set
<http://www.da.gov.ph>

Of flowers...

We move on to the potato seedling production area but only one of us could enter the green houses by changing footwear and passing through the footbath. That's how careful are the researchers in preventing the contamination of the seedlings. Instead of tubers as planting material, the University is producing enough seedlings through tissue culture then these are sold to potato farmers at a low price. This is one service that the University and the NPRRTC is now giving the potato farmers.

We have run out of films and tapes but have gathered enough materials not only for BAR Today but also for the BAR Chronicle for the issues to come. We also agree that we could not take in another heaping plate of rice and Baguio vegetables so we go down to the lowland and have lunch at 2:30 with our vehicle jam-packed with the beautiful potted plants from King Louis Farm, gifts and souvenirs from BSU and other products and articles not worth divulging.
Secret.

GMA, DA awards 2001 Gawad Saka winners

To highlight its 103rd anniversary, the Department of Agriculture (DA) honored this year's winners of the prestigious Gawad Saka Awards. Her Excellency President Gloria Macapagal-Arroyo assisted by DA Secretary Leonardo Q. Montemayor presented the awards on October 25 at the Heroes Hall in Malacañang.

Individual winners for the outstanding farmers and fisherfolk category received P25,000 cash each. They were: Luz Lozada (Outstanding Rice Farmer), Jose Lorenzo (Outstanding Corn Farmer), Joel Laxamana (Outstanding Coconut Farmer), Andres Berongoy (Special Citation), Pablito Sandoval (Outstanding Sugarcane Farmer), Cirila Sanchez (Outstanding HVCC Farmer), Cosme Gunnawa (Outstanding Large Animal Raiser), Albino Antipolo (Outstanding Small Animal Raiser), Domingo La Torre (Outstanding Fisherfolk), Guillermo Amploquio (Special Citation), Erlindo Alcantara (Special Citation), Victor Hortiz (Special Citation), Alberto Tabangay (Outstanding Fishfarmer), Samuel Corpuz (Outstanding Young Farmer/Fisherfolk), Joseph Fernando (Outstanding Young Farmer/Fisherfolk), and Ernesto Dongbo (Outstanding Young Farmer/Fisherfolk).

Outstanding farm organizations received project grants from P150,000 to P250,000 pesos. The winners were:

Shelmed Cottage Treasures (Outstanding HVCC Processor), Sirawan Foods Corporation (Outstanding HVCC Processor), TUGA 4-H Club (Outstanding Young Farmers' Organization), Saints Peter and Paul Multi-purpose Cooperative (Outstanding Small Farmers'/Fisherfolk's Organization), Candelaria Rural Improvement Club (Outstanding Rural Improvement Club), MAFC of San Francisco, Surigao del Norte (Outstanding Municipal and Fishery Council), and PAFC of Baligatan, Ilagan, Isabela (Outstanding Provincial Agricultural and Fishery Council) .

Dr. Mercedes Umali-Garcia of the National Institute of Biotechnology and Applied Microbiology of the University of the Philippines at Los Baños (UPLB) garnered the Outstanding Agricultural Scientist Award for developing the BIO-N fertilizer and the Biotab fertilizer. The Bureau of Agricultural Research (DA-BAR) will provide her a research grant of up to P1 million pesos. Dr. Garcia also received the Rizal-Pro Patria medallion.

The Gawad Saka Awards is an annual search for outstanding achievers in agriculture and fisheries that represent the various stakeholders of the community—farmers, fisherfolk, farm communities, scientists and organizations as well as DA and local government employees. (Junelyn S. de la Rosa)

BAR Chronicle

A bi-monthly publication of the
 Bureau of Agricultural Research
 3/F ATI Bldg., Elliptical Road
 Diliman, Quezon City 1104

Entered as a second class mail at the Quezon City Central Post Office under permit no. 753-01 NCR