Luzon group trains to enhance rubber bud-grafting skills

After finding that rubber trees could also thrive in parts of Luzon, the Bureau of Agricultural Research (BAR) has since funded various R&D projects and activities to support the development and commercialization of natural rubber in areas other than Mindanao. One particular activity sponsored by BAR in this regard was the conduct of the hands-on training on bud-grafting of rubber seedlings for Luzon plant propagators at the Central Luzon Integrated Agricultural Center (CLIARC) in Magalang, Pampanga.

The training was conducted with an end goal of addressing one of the most pressing problems in natural rubber propagation, which is the lack of quality budded rubber seedlings ready for planting. Thirty participants from the Luzon cluster benefited from the training, which was designed to enhance bud-grafting skills of rubber plant propagators.

Two professors from the University of Southern Mindanao (USM), Dr. Romulo Cena and Prof. Rogelio Testado, served as resource persons in the training. Before the participants engaged in practical exercises, Dr. Cena gave a lecture on the Physiology, Seedling Propagation, and Budding while Dr. Testado gave a lecture on Nursery Establishment and Management.

The participants consisted of project implementers and plant propagators from the Bureau of Plant Industry (BPI, Quezon City), Don Mariano Marcos Memorial State University (DMMMSU, La Union), Southern Luzon State University (SLSU, Quezon), DA-CLIARC, DA-Cagayan Valley Integrated Agricultural Research Center (DA-CVIARC), representatives from DA-Regional Field Unit IVb (MIMAROPA), University of Rizal System (URS, Rizal), and LGU Kalinga Province.

At the end of the training, the participants formed the Luzon-wide Rubber Propagators Association and elected a set of officers. The primary objective of the new association is to promote the continuous exchange of information among members and be represented in the different programs and activities of other agencies and institutions concerned with rubber R&D, extension, and education.

Mr. Rodolfo Galang, BAR coordinator for rubber programs and activities, said that it is currently supporting several RDE and technology commercialization projects on promoting the cultivation, production, and processing of rubber. These BAR-funded projects are implemented by DA-CLIARC, DA-MIMAROPA, DMMMSU, SLSU, and BPI.

"The project proponents have produced an ample number of rubber seedlings that are now ready for budding. What we want is to increase production and enhance their skills in bud-grafting to ensure the production of quality planting materials," Galang said. He added that the presence of a thriving budwood garden in DA-CLIARC in Pampanga makes it the most suitable venue for the training.

However, besides the lack of quality budded rubber seedlings, Mr. Galang said that other problems that impede the growth of the natural rubber industry in the country need to be addressed. These are low productivity of existing old rubber trees, high production cost because of rising prices of farm inputs, development and transfer of production and postharvest technologies, and the difficulty for rubber farmers to access sustainable credits because of the long gestation period of rubber trees.

(Miko Jazmine J. Mojica with reports from Rudy L. Galang)

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CAPSA-BAR workshop highlights adding value to agricultural products through certification

(L-R, first row) Dr. Marlowe Aquino of BAR, Dr. Togar Napitupulu of CAPSA, Ms. Josefina Lantican of BAR, and Dr. Ronnie Natawidjaja of Padjadjaran University in Indonesia pose with the participants of the workshop on "Adding Value to Fresh and Processed Produce through Product Certification".

Perceived as a key to empower farmers in improving quality of their produce, resulting in a fair share of benefits from the supply chain, product certification is gaining attention given its competitive edge in the world market. Sad to say though, in Third World countries such as Indonesia and the Philippines, product certification requires more than they could afford.

To identify market edge and added value to certified products, the United Nations-Centre for Alleviation of Poverty through Secondary Crops Development for Asia and The Pacific (UN-CAPSA) and the Department of Agriculture-Bureau of Agricultural Research (DA-BAR) conducted a workshop, "Adding Value to Fresh and Processed Produce through Product Certification," on 17-18 December 2008 at the EDSA Shangri-La Manila Hotel.

Dr. Togar Napitupulu, senior economist of UN-CAPSA, welcomes the participants of the workshop on behalf of their delegation.

Dr. Marlowe U. Aquino, head of the Applied Communication Division of BAR, delivered the opening message in behalf of Director Nicomedes P. Eleazar. He also served as the master of ceremony for the two-day activity.

On behalf of their delegation, Dr. Togar Napitupulu, senior economist of UN-CAPSA, welcomed the participants. He expressed his enthusiasm and support for the objective of the activity putting great emphasis on the important role of product certification in the global trade.

One of the highlights of the activity is the presentation of the results of the studies earlier conducted in the Philippines and Indonesia giving participants a perception of the present scenario of the agricultural products supply chain and how product certification is being practiced in these two countries.

Ms. Josefina M. Lantican, economist and technical adviser of BAR, presented the Philippine case of agricultural product certification. Dr. Ronnie S. Natawidjaja Jr., director of the Center for Agricultural Policy and Agribusiness Study, Padjadjaran University, presented the Indonesian case.

Participants were provided with the product standards formulation and process certification of various existing certifying bodies in the Philippines. Director Gilberto F. Layese of the Bureau of Agriculture and Fisheries Product Standards (BAFPS) lectured on Good Agricultural Practices (GAP) Program of DA, including its costs and benefits and future directions. For Organic Agriculture

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CAPSA-BAR...*from page 1*

“ ...output of the workshop serves as important basis not only on strengthening a market niche for certified products but also in providing favorable policy environment for government support through the implementation of relevant projects and programs.”

(OA), Ms. Leilani Ramona K. Limpin of the Organic Certification Center of the Philippines (OCCP), reported specific topics on regulations, standards, certification requirements and processes, issues and concerns, and future directions. The last topic dealt on the standardization of food products as presented by Engr. Jake M. Velasco of the Bureau of Product Standards of the Department of Trade and Industry (BPS-DTI).

To present specific policy recommendations and strategies that would promote the adoption of product certification, a workshop was conducted. Participants were grouped into two: 1) Policy and implementation, 2) Users and stakeholders of certification.

Facilitating the group discussions were experts from UN-CAPSA and Padjadjaran University in Indonesia. Groups were given guide questions to start the discussion. The two questions were: 1) How are we going to harmonize the different laws and policies on assuring quality products, process, practices in agriculture and fisheries; 2) What specific programs do we need to do to ensure the quality of our fresh and processed produce through product certification.

As a consolidated output of the two groups, six major issues and concerns came out. These are: 1) tedious and expensive product/process certification; 2) lack of information campaign on GAP and OA; 3) Inadequate incentive package on the part of the government to support DA's programs on GAP and OA; 4) Certification as a demand-driven issue and making farmers responsive to the demand of world market; and 5) private monopoly of a certifying agency for organic agriculture.

From these issues and concerns, various suggestions and solutions were formulated as recommendations and strategies that would further promote the adoption of product certification in the country enabling farmers to take advantage of the growing market for high-quality food products.

With the help of UN-CAPSA, BAR hopes that with a proper system in place, the output of the workshop serves as important basis not only on strengthening a market niche for certified products but also in providing favorable policy environment for government support through the implementation of relevant projects and programs.

Based in Bogor, Indonesia, CAPSA is a subsidiary body of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) with the goal of alleviating poverty in Asia and the Pacific through the development of secondary crops. Specifically, its tasks include producing and disseminating information and successful practices on poverty alleviation measures; helping coordinate socio-economic and policy research on agriculture; networking with national and international organizations and key stakeholders; and conducting research and analyzing trends and opportunities to improve the economic status of rural people.

BAR is one of CAPSA's partners in the Philippines along with the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), and National Anti-Poverty Commission (NAPC). *(Rita T. dela Cruz)*

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The official monthly publication of DA-BAR

BAR Chronicle is the official monthly publication of the Department of Agriculture-Bureau of Agricultural Research (DA-BAR), mandated to ensure that agricultural researches are coordinated and undertaken for maximum utility to agriculture. This publication provides regular updates on DA-BAR's activities as the country's national coordinator for agriculture and fisheries R&D. It also highlights features and news articles concerning NaRDSAF-member institutions.

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4. Place a vessel to collect the vinegar drops from the bamboo pipe.
5. If wood is burned for 12-15 hours in a 200-liter oil drum kiln, it should produce 2-7 liters of wood vinegar. At this stage, it is called raw wood vinegar.
6. Leave the raw wood vinegar for three months to become silted. The vinegar will turn yellow like vegetable oil, after which it will turn light brown and the tar will become silted. The top content will be light, clear oil. Remove the tar and light oil, as well as the dark brown translucent oil and the remainder will be sour vinegar.

How to use

The wood vinegar must be blended with water in a ratio of 1:50 (1 liter wood vinegar and 50 liters water), or up to a ratio of 1:800 (1 liter wood vinegar and 800 liters water).

For plant production specifically, spray the solution over plant shoots. Wood vinegar, like hormones, will be absorbed into twigs, trunks, or leaves. Plants will be stronger, and leaves will be greener and resistant to pests and diseases.

Alternative technology

The technology offers an alternative agricultural product that is environmentally safe, locally available, and seemingly easy to follow technology. This addresses the present and emerging problems that are affecting the farming industry. Foremost of which are the steadily increasing prices of farm inputs like fertilizers, feeds, pesticides, and antibiotics.

DA-Technology Generation (DA-TechGen) of Region IVA installed its wood vinegar technology chamber at one of their technology demonstration farms. BAR Region IVA Coordinator Amavel Velasco (left) inquires regarding the technology. OIC Joselito Noceda (right) and Eva Pugay (2nd from left) of DA-TechGen explain the process involved in producing wood vinegar.

These are compounded by issues related to the production of safe and cheap food, and environmental pollution from the use of chemicals, and from decomposing animal and farm waste. The mitigation of these concerns must be facilitated by the use of wood vinegar thus, a closer look at this technology is recommended.

For more information on this technology, please contact OIC Joselito Noceda of DA-RFU IVA Technology Generation (TechGen) at telephone numbers (046) 4121461, (046) 4121463 or email at: da_techgen@yahoo.com

Source:
Food & Fertilizer Technology Center for the Asian and Pacific Region (2008). Wood Vinegar. Information retrieved on 23 December 2008, from: http://www.agnet.org/library/pt/2005025/

CBWM...*from page 12*

commodities for alternative livelihoods such as vegetables, rootcrops, rice, corn, coconut, and fruit trees. The BSWM project staff observed that the stakeholders took the responsibility to manage the technologies on soil and water management, soil conservation, and proper land use. The provision of alternative livelihood for increased productivity and profitability was also included in the provinces of Ilocos Sur, Tarlac, Bulacan, and Bohol. With the project's collaboration with other organizations such as provincial local government units and the Federation of Free Farmers in the Philippines headed by President Leonardo Q. Montemayor, the project is assured of its effectiveness and sustainability.

Positive results were noted by the project staff: the idea of failure is far from reality as people, technologies, processes, and resources are intertwined to contribute to its success in new and expanded areas. Furthermore, people's cohesiveness and empowerment capability served as influencing factors in managing community resources efficiently and effectively.

With these observations, the CBWM project will not only provide relevant technologies and services to farmers but will ensure food security, productivity, profitability, and sustainable development in all areas with enhanced motivation and capability on proper soil and water management, land use, and alternative livelihood activities through community participation, empowerment, and development (*Marlowe U. Aquino, PhD*).

Exploring the beneficial uses of wood vinegar

by CHRISTMAS B. DE GUZMAN

For more than 30 years now, Japanese farmers have been using wood vinegar to improve crop and livestock production. They use it as: 1) foliar spray, particularly for fungus (grey molds), 2) insecticide when mixed with hot pepper, 3) enhancer for compost-making, 4) soil conditioner to improve the soil when mixed with charcoal, and 5) feed supplement or additives for livestock feeds

What is wood vinegar?

Wood vinegar is a liquid substance that is obtained when organic materials such as wood, coconut shell, bamboo, grass, and other plants are placed in a heating chamber. When these materials are heated, their juices, oils, and liquid contents evaporate as steam or vapor. The vapor passes through a tube where it will be allowed to cool. When cooled, the vapor will turn into liquid (condensation process). The chamber is heated by burning firewood at the lower portion of the chamber. The liquid (wood vinegar) flows from a tube
into a container ready for packing, storage, or use.

Wood vinegar contains organic substances such as organic acids, phenolic substances, carbon substances, alcohol, neutral materials, and base acidic substances. In addition, around 200 chemical substances are also present.

Studies showed that when charcoal and wood vinegar were used as feed supplements in poultry, salmonella bacteria, which are responsible for gastrointestinal diseases of chickens, were eliminated. In chicken egg production, farmers claimed that their hens improved their egg-laying performance, had better rearing characteristics, and improved their hatching efficiency. It also improved the quality of eggs such as better taste, reduced cholesterol content, and had harder egg shells.

Studies on swine production showed that sows improved their performance. They became healthier, their fertility rate improved, and piglet size became uniform. The fatteners also improved their feeding efficiency and meat quality. The foul odor from the manure of the pigs was also reduced. Furthermore, reports from farmers indicated that their sows increased their milk production and diarrhea among piglets were prevented or cured.

In cattle, it is said that wood vinegar also improved meat quality, fertility rate, milk production, and feed efficiency.

How to make

Wood vinegar is actually a distillate of burning wood. According to Mr. Masaki Yokomori, technical consultant of the Japanese Agricultural Exchange Cooperation (JAEC) of the government of Japan, an estimated cost of P30,000 is needed for the chamber construction. Although the design can be modified to suit available resources, other necessities such as water, firewood, bamboo, grasses, and others must readily be available. Except for pine tree, any tree species can be utilized in producing wood vinegar.

The Thailand Department of Agriculture-Agricultural Production Sciences Research and Development Office recommends the following as steps in producing wood vinegar:

1. Cure wood that has heartwood and bark for 5-15 days.
2. Pile wood in the kiln (Fig. 1). Close the kiln and cover every hole with clay. Burn it at 120-430ºC.
3. After one hour, put a tile at the top of the chimney. If brown or dark brown drops appear on the tile, allow smoke to flow through a bamboo pipe so that the hot steam may be condensed into liquid.

Spice plant extracts show promise against peanut aflatoxin

The growth of the fungus that brings about aflatoxin in peanut can be inhibited by extracts of garlic *(Allium sativum)* and other plants.

This was found in a sub study made by researchers of the Central Luzon State University (CLSU) on the effects of herbs and spices on the causal fungus of aflatoxin.

The research was conducted under the auspices of a collaborative project between BAR and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) based in India titled, "Enhancing Adoption of ICRISAT Legume Varieties and Technologies in the Philippines".

The sub study, "Cultural control using selected herbs and medicinal plants against the aflatoxin fungus, *Aspergillus flavus*, on peanut", was conducted in CLSU by researchers led by Marilyn Patricio. The others in her group were Raol Pamiloza, Frodie Waing, and Evergilio Aquino Jr.

Interestingly, the plants studied are the kind that one may readily find in a garden or vegetable patch. Crude extracts were taken from:

1. onion - bulbs (*Allium cepa* L.)
2. garlic - cloves (*Allium sativum* L.)
3. sweet basil or solasi - leaves (*Ocimum basilicum L.*)
4. ginger - rhizomes (*Zingiber officinale* Rose.)
5. neem tree - leaves (*Azadiracta indica* Adr. Juss)
6. ringworm bush - leaves (*Cassia alata* L.)
7. Magascar periwinkle - flowers (*Catharanthus roseus* (L.) G. Don)
8. Phyllantus - leaves (*Phyllantus amarus* Schum. And Thonn.)
9. kalachuchi - flowers (*Plumeria acuminata* Ait.)
10. marigold - flowers (*Tagetes erecta* L.)

Two methods of evaluating the suppressive effect of the materials were used: paper disc and blotter. For the paper disc method, filter paper discs were immersed in suspensions of *A. flavus* and small amounts of the extracts were then placed on top. The efficacy of the extracts for suppressing the development of the fungus on paper discs was compared with that of a commercial fungicide, Dithane M-45 (at 2000 ppm), and a control (no treatment whatsoever). The suppressing effect of each extract was determined through measurements of the growth of the fungus across the discs at 3, 5, and 7 days after incubation.

For the blotter method, a peanut variety known to be susceptible to *A. flavus*, Pn-9, was used. Each of the crude extracts was sprayed on Pn-9 seeds that had previously been disinfected. These were then placed in Petri dishes with *A. flavus*. For comparison, Dithane M-45 was also applied on seed samples and an untreated lot served as control. The plates were incubated and observed for *A. flavus* infection for several days. Measurements taken were of percentage infection of peanut seeds, the development of the fungus on the kernels, and percentage germination.

The results for the paper disc method showed that all the extracts initially suppressed the growth of *A. flavus* in comparison with the control but at varying extents. The garlic extracts initially exhibited zero fungal growth as did the Dithane M-45. At 7 days after infection (DAI), the garlic extracts and Dithane M-45 still showed zero fungal growth. The ginger extracts were the second with lesser suppression of fungal growth.

For the blotter method, all seeds treated with extracts were initially observed to have zero rates of infection as compared with Dithane M-45. The control had 77.5% infection. However, at 7 days after treatment (DAT), it was only the garlic and ginger extracts along with Dithane M-45 that still had zero values. The others exhibited higher rates of infection ranging from 47.5% for kalachuchi extract to 100% infection for the onion extract.

The spread of the fungus on the peanut seeds was observed from 5 DAT until 28 DAT. The results showed that it was only the extracts from garlic that had a rating of 1.00 (the Dithane M-45 had a rating of 2.30 while the control had 6.00). This was followed by ginger at 3.83. In all the crude extracts except garlic, the spread of the growth of *A. flavus* increased with time. It can be seen then that the suppressive effect of garlic lasts longer than Dithane M-45.

Percentage germination were measured at 7 DAT. The measurements were arrived at after discounting for other causes of nongermination such as moisture content, seed viability, toxic substances that may be released by *A. flavus*, and the prevailing temperature. The results showed that the extract from onions *(A. cepa)* had the lowest germination percentage (45%) and that the garlic extracts showed the highest germination (75%). The performance of garlic was even better than Dithane M-45 which had only 62.5% germination at 7 DAT.

The suppressive effect of the crude extracts on *A. flavus* is thought to be due to fungicidal properties inherent to the plants tested. Other plants, such as ampalaya (*Momordica charantia*) and olasiman (*Portulaca oleracea*), have previously been shown to have an inhibiting effect on fungal organisms affecting ubi and gabi. Nigerian researchers have also demonstrated that extracts of *Moringa oleifera* Lam. (malunggay) can inhibit the growth of *Colletotrichum destructivum* in cowpea. The CLSU research indicates that garlic and ginger are among the plants that may enable commercial crops to respond better to fungal infection.

With the encouraging results from this laboratory study, further development of locally available spices and herbs, particularly garlic and ginger, as sources of phytochemicals for the control of *A. flavus* appears to be in the right direction. *(Victoriano B. Guiam)*

IP specialist from CGIAR visits BAR

Atty. Guat Hong The (right), IP specialist from CAS-IP, discusses IP policies and programs with Dr. Andrea B. Agillon (left), head of IPRO, during her visit at BAR for an orientation meeting.

An important mechanism that provides scientists and researchers a way of controlling how their protected works are to be utilized and optimized, is the Intellectual Property Rights (IPR). This is designed to ensure that they are properly rewarded for such inventive endeavors.

Having an effective and easily implementable IPR system encourages and stimulates the creation of more innovations and their ingenious use beneficial to people. This proves that the producer of a protected work is not the only beneficiary of this endeavor but the users of technologies as well. IPR provides a secured environment to which the general public can have access to protected high quality research without the fear that the original work may not be acknowledged.

On 16 December 2008, lawyer Guat Hong Teh, an IP specialist from the Central Advisory Service on Intellectual Property (CAS-IP), visited the Bureau of Agricultural Research (BAR) for an orientation briefing of its IP policies and programs. CAS-IP is a system unit of the Consultative Group on International Agricultural Research (CGIAR), a network of 15 independent international institutions working in the field of agricultural research.

The overall goal/vision of CAS-IP is to enable access and use of CGIAR products for the benefit of the poor through effective IP and technology transfer management. Its mission is to assist the alliance centers of CGIAR, their partners, and the CGIAR System as a whole in a comprehensive approach to the management of Centre intellectual assets, as public goods. It provides assistance, support, and facilitation role and secures access to such intellectual assets.

CAS-IP recognizes that IP issues range from plant varieties and licensed technologies to patents and diagnostic kits. The ongoing challenge is to ensure that this property is effectively managed when in the custody of the various users.

Among the concerns discussed by Atty. Teh with BAR were: 1) strengthening the National Partners Initiative (NPI) in relation to CAS-IP's support towards building on knowledge and expertise in handling intellectual property and technology transfer, 2) establishing an international professional society of IP practitioners, and 3) bridging the gap between IP and technology transfer.

Teh is a lawyer by profession and has experience in dispute resolution and intellectual property matters. Before her appointment at CAS-IP in 2006, she was an associate in an international law firm providing advise on various dispute resolution and intellectual property matters. She is based in Kuala Lumpur, Malaysia.

Meeting her during the briefing were Dr. Andrea B. Agillon, head of the Intellectual Property Rights Office (IPRO), and Mr. Victoriano B. Guiam, head of the International Relations Unit (IRU). Dr. Agillon briefed Atty. Teh on the bureau's IP policies in relation to the overall IP system of the Department of Agriculture and other concerned agencies.

Also present during the meeting was Ms. Mariko M. Ramos of the Program Development Division, who explained the various research grants that BAR's partner-agencies can avail themselves of. Other attendees included Ms. Leilani D. Pelegrina of IPRO and Ms. Ma. Elena M. Garces of the Technology Commercialization Unit.

(Rita T. dela Cruz with reports from Victoriano B. Guiam)

Present during the meeting are (L-R) Victoriano B. Guiam, head of IRU, Mariko M. Ramos of PDD, Leilani D. Pelegrina of IPRO, and Ma. Elena M. Garces of TCU.

Of milestones and profitability of R&D projects

by MIKO JAZMINE J. MOJICA

Participants for the second batch were composed of proponents of BAR-funded projects from SUCs.

The end of the year makes it automatic for most organizations to reflect on what it has achieved so far. Milestones are given such a premium and are brandished grandly in annual reports. For R&D organizations such as the Bureau of Agricultural Research (BAR), it is not any different. But how do we measure accomplishments? More important, how do we support our claims of making a positive impact on the lives of our stakeholders and beneficiaries?

Both urgent and important

For BAR's part, its latest endeavor to strengthen the capacity of its project proponents may only be the beginning of a feat, but it could probably be considered a quantum leap for the organization and its stakeholders anyway.

In November, about 60 proponents of BAR-funded projects and a handful of BAR technical and senior staff members were trained on determining the profitability of new production and processing technologies. The training was conducted by the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) in partnership with BAR.

It was a short and basic course on financial viability but it nevertheless answered two important concerns: educating project proponents to present an accurate estimate of the profitability of projects they wish to pursue; and allowing potential investors, funding agencies, and policymakers to easily determine if the project is worthy to get support or not. Consequently, two significant outcomes are likely: scarce resources are spent wisely and projects with the highest benefits and real economic potential are explored and prioritized.

Experts pooled

BAR Director Nicomedes P. Eleazar and Dr. Mercedita Sombilla, SEARCA's Consulting Services Manager, closely collaborated on making the capacity enhancement training possible by merging its resources. Respected professors who are experts in agricultural economics at the University of the Philippines Los Baños (UPLB) were tapped as the key resource persons.

Dr. Corazon T. Aragon, a full-pledged professor and consultant to different government agencies and international funding organizations such as the World Bank, acted as the overall training expert. Dr. Aragon, with Dr. Cesar B. Quicoy, Prof. Alessandro Manilay, and Prof. Antonio Jesus Quilloy trained two batches of trainees over two consecutive weeks in Los Baños, Laguna.

The training flow for both batches consisted of long but practical laboratory exercises per topic to make sure that the participants could follow and apply everything that was taught to them in the lectures. The participants were basically taught the fundamentals in four topics as follows: Cost and Return Analysis and Income Statement Analysis, Partial Budget Analysis, Break-even Analysis, and Financial Cash Flow Analysis.

BAR Dir. Nicomedes P. Eleazar (front row, center) poses with participants of the first batch of trainees composed of proponents of BAR-funded projects from RIARCS and RFRDCs. Also in the photo are SEARCA officials, namely: Dr. Mercedita Sombilla, manager of Consulting Services (left of Dir. Eleazar); Dr. Gil Saguiguit Jr., deputy director for Admin (right of Dir. Eleazar); and Dr. Corazon Aragon (front row, second from right), over-all training expert.

Students again

For many of the participants, the training was "like going back to school again". The training was started with a pretest to determine the existing knowledge of participants before the training and was ended with a posttest to measure how much they have learned from the lectures and exercises. The training was an eye-opener not only for the participants but its organizers as well.

For participants who have little or no knowledge in proper profitability analysis, it made them realize what they were doing wrong in preparing the budget and computing the profitability of their projects. Moreover, that it is actually more difficult to be conscientious in properly identifying the items that should be reflected in their profitability analysis than computing the figures that they came up with.

For the organizers, it made them realize how significant the training was for all its proponents. More than striving for achieving a standard for reflecting the budget framework and financial viability of projects, it was obvious that selling the idea on the significance of the training and getting them to re-echo what they learned to other proponents in their respective organizations are most critical.

After all, for determining the impact of R&D projects, passing and nurturing knowledge could probably count as a milestone.

Salt fertilization...*from page 11*

confirms the effectiveness of common table salt for 'bugtok' control for bananas growing under coconuts.

In the Pava study, there was 0% incidence of 'bugtok' disease in farms where table salt was applied on the stump of harvested banana adjacent to the one bearing the new inflorescence at least 10 days before and/or 5 days after emergence of the adjacent inflorescence. In the PCA version, the salt was placed on the harvested banana stump much advanced or later than 5 days after emergence of inflorescence of the adjacent banana plant. According to the researchers, the timing of salt application on the stump of harvested banana, considering the flowering stage of the adjacent banana plants, plays a significant role in the complete control of 'bugtok' disease in 'Cardaba' banana plants. Placing the salt at the right time will totally eliminate 'bugtok' in the banana fruit.

The researchers think that salt has a killing effect on the 'bugtok' bacteria that enter through the banana flower, thus preventing the onset of the disease. Furthermore, NaCl may also have the effect of enhancing the ability of the plant cells to withstand attacks by the 'bugtok' organism.

Effect of NaCl application on the yield of 'Cardaba' banana under 'LAGT' coconut palms

Based on the PCA data, banana plants treated with NaCl produced heavier and more banana fruits estimated at 10-13 tons of 'Cardaba' fruits per ha/year as compared to only 8.8 tons for the untreated plants. More important, there were more marketable fruits from the salt-treated plants as there was a lower proportion of rejected fruits owing to 'bugtok' as compared with the untreated banana plants.

According to the PCA researchers, this agrees with research findings on other crops about the positive effect of NaCl in increasing yield. In New Zealand, the yield in fresh roots and fresh sugar content of fodder beet (*Beta vulgaris* L.) was improved significantly with the application of Cl and that this can increase linearly as more salt is applied. In coconut, PCA studies have shown that NaCl is effective in increasing nut production, weight of copra per nut, and copra yield per tree.

The 34% incidence of 'bugtok disease' in the untreated Cardaba banana is equivalent to a loss of about 3,000 kg/ha. With the technology of salt application, this loss can be prevented and better yield and quality of banana can be obtained. The PCA trial showed that fertilization of bananas with salt, in combination with other good agricultural practices, can assure 'Cardaba' and 'Saba' banana farmers of a good harvest of quality bananas even in areas where 'bugtok' is prevalent.

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CBWM stakeholders speak up for sustainability

The final implementing stage of community-based watershed management (CBWM) project turned out to be a significant achievement when the stakeholders agreed to continue its activities on appropriate use and application of technologies and services in the pilot sites. This project is being implemented jointly by the Bureau of Soils and Water Management (BSWM) and the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), which provided technical assistance during the entire project duration.

As mentioned by the farmers during the project impact assessment in Talibon, Bohol, they would take full responsibility to sustain field operations even without further external funding immediately after project completion at the end of the year. Specifically, the community members will rely on their resources and strength to work and produce quality outputs for their community's progress.

The CBWM project is a multi-sectoral initiative that combines soil and water management technologies, using principles of community development, to effect change in the lives and conditions of farmers, especially in areas with small water reservoir for better production management system. Through farmers' participation in planning, implementation, and monitoring and evaluation activities, the community is assured of continued local support essential in the production of priority

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BAR, PCARRD partner for IP awareness in Cagayan Valley

Speakers and participants during the BAR-PCARRD sponsored activity on IP Management Training Workshop of CVARRD staff members.

The Bureau of Agricultural Research (BAR) and the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) sponsored an activity to enhance and support the Philippine agricultural research and development (R&D) through the recent Intellectual Property (IP) Management Training Workshop of the Cagayan Valley Agriculture Resources Research and Development Consortium (CVARRD) at Isabela State University (ISU) in Echague, Isabela.

The workshop had been conceived since the early part of 2007 when ISU President Dr. Rogelio Quilang and its research director, Dr. Edmundo Gumpal, visited IPRO-BAR to request IP training. That time, they thought of giving it to ISU staff only. The training was not scheduled that year because of more pressing priorities.

Later in 2008, they decided to hold it through CVARRD and expanded the topics to include Plant Genetic Resources and starting an IP Management Office. The workshop was finally held at the CVARRD building, ISU main campus on 26-27 November 2008.

Dr. Bessie Burgos and Mr. Noel Catibog of PCARRD, Ms. Restituta Antolin of the Department of Environment ad Natural Resources (DENR)-Region 2, and Dr. Andrea Agillon and lawyer Dennis Gumpal of BAR were the resource speakers. Dr. Burgos discussed relevant international and national treaties, laws and policies regarding IPR (WTO, TRIPS, etc.), as well as IP Management tools in relation to the innovation process. Mr. Catibog discussed the Establishment and Operation of IP/Technology Licencing Office, while Ms. Antolin discussed the Wildlife and Resources Conservation and Protection Act.

BAR speakers were given three topics each. Dr. Agillon discussed Relevance of IP in Economic Development and Encouraging Creative Talents, Patents and Utility Models, and Patent Search and Documentation as Sources of Technological Information. She emphasized the different BAR services in IP Management for the DA-NaRDSAF member-agencies. Atty. Gumpal talked on Copyright and Related Rights, IP Policy Formulation which included a workshop. Member agencies were able to draft their IP Policies and have them critiqued by the resource speakers. The speakers assured the participants of their help in IP management.

The same seminars in 2009 in other consortia in the country that will request the same services as a delivery program of both the agencies for the improvement and development of the A/F and S/T sectors. This will encourage researchers and scientists to develop exemplary outputs that are patentable or need IPR protection for national development.

Hopefully, the information gained by the researchers will serve as contributing factor in making R&D excellent and at par with that of neighboring countries in the Southeast or even Asian region. (*Andrea B. Agillon, PhD and Marlowe U. Aquino Ph.D*)

Solsoloy attends GFAR, CGIAR, and CABI meetings

Dr. Teodoro S. Solsoloy, assistant director of the Bureau of Agricultural Research (BAR), officially represented the Philippines in three international meetings in support to global and national agricultural research and development (ARD).

These are the Global Forum on Agricultural Research (GFAR) Donor Support Group Meeting on November 29; Consultative Group on International Agricultural Research Annual General Meeting (CGIAR- AGM08) on November 29-December 5 both held at the Joaquim Chissano Conference Center (JCCC), Maputo, Republic of Mozambique; and Center of Applied Biology International (CABI) Executive Council Meeting on December 16 at the International Coffee Organization, London, United Kingdom.

The three meetings are annually conducted to review and present the organizations' accomplishments and future activities which enhance and support the international and national agricultural development.

GFAR

Dr. Solsoloy reported that GFAR focused its discussion on its purpose and business plan for 2008-2009, expectations of GFAR arising from the CGIAR change process with emphasis on the resource implications and possible mechanisms and the proposed plan for CY 2009 including donors' re-sourcing activities.

Specifically, the forum highlighted four renewed foci on strategic objectives that have implications to development. These included *advocacy for change* which will bring about collective movements for change especially on the use of knowledge and voices of ARD stakeholders including coherence, awareness and efficiency in addressing key themes of international agencies; *institutions for the future*, which leads to the generation and application of knowledge as a critical factor to meeting the huge global challenges facing agriculture; *increasing ARD effectiveness* by inter-regional partnership; and *bringing knowledge for all* (El-Beltagy 2008).

With GFAR's responsibility towards ARD, it hopes to further enhance and support local, national, and international development with the use of agricultural knowledge by creating common access to diverse information databases, sharing of regional agricultural information and learning systems, linking with ARD webring through open access and collective knowledge and learning. These initiatives are hope to shape the future of agriculture globally with localized implementation.

CGIAR-AGM

This year's Annual General Meeting of CGIAR discussed the CGIAR Change Management Process, Independent Review of CGIAR System, and Medium Term Plans and 2009 Financing Plan. The meeting provided the active participation of the Philippines through Dr. Solsoloy to share his views and perspectives on the Change Management Innovations of CGIAR. This is the first time in the history that they allowed a country with an observer status to participate in the discussion and given a voter power.

It was noted that there were three main aspects handled within the change management process, namely: Visioning, Partnerships, Governance, and Financing Mechanism. Within the year in review, the visioning aspect, particularly the communication and outreach, media has played an important role as it increased coverage by growing interest in agriculture owing to the rising food prices and more proactive media approach. This was observed on the media stories covered to include promotions carried out in partnerships with Centers featuring topics on food price crisis, Svalabard Global Seed Vault, the Enola bean patent claim, the use of wastewater in urban and peri-urban agriculture, and bush meat trade and banana production and conservation.

It has also drawn great interest the system-wide capacity building and collaboration with some Centers and the presence of CGIAR in international events with publication and information dissemination and management in areas of agricultural development.

On to the financial aspect, the total system revenues in 2007 were US$520 million, an increase of US$72 million (16%, or 14% in real terms) from US$ 448 million in 2006 (Wang 2008).

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Dr. Solsoloy with (L-R) Dr. Rex Navarro, director of Communications, ICRISAT; Dr. William Dar, director general of ICRISAT, and Dr. Manuel Lantin, science advisor, CGIAR Secretariat.

Salt fertilization controls *Bugtok* disease, improves yield of *Cardaba* bananas - PCA study confirms

by VICTORIANO B. GUIAM

The application of sodium chloride (NaCl) or common salt is highly effective in controlling the incidence of 'bugtok' disease on 'Cardaba' banana and in enhancing yield.

This was recently confirmed by researchers of the Philippine Coconut Authority (PCA) in a paper titled, "Field Application of Common Salt (Sodium chloride) on Cooking Banana cultivar 'Cardaba' (*Musa balbisiana*) grown under a Coconut + Banana Agro-ecosystem: A Techno-Demonstration Trial in Southern Mindanao".

The report was presented at the 2008 National Research Symposium of the DA-Bureau of Agricultural Research on 2 October 2008 by Millicent I. Secretaria, Science Research Specialist II/Scientist 1 of the PCA-Davao Research Center (PCA-DRC) in Bago-Oshiro, Davao City; Dr. Severino S. Magat, Department Manager/Scientist IV of PCA-Diliman in Quezon City; and Marianita N. Eroy, Science Research Specialist II and Officer-in-Charge of the Agronomy and Soils Division of the PCA-DRC.

'Cardaba' and 'Saba', the varieties used for making quality chips, flour, and ketchup, are the most affected banana varieties and 'bugtok' is very common in areas where these are grown. To the untrained eye, 'bugtok'-infected banana plants appear normal with the leaves remaining green and the fruits seemingly normal in development. However, the bracts of the male inflorescence (*puso)*, if left in the fruit bunch, do not fall off.

In time, the male inflorescence acquires a dry and loose appearance. Externally, this character is the only distinguishing symptom that can differentiate healthy from infected plants. Internally, the effects of the disease show up in the banana fruit. The disease's main symptom is described as the red and black discoloration running from the core of the banana fruit that can extend towards the whole pulp. The fruit stem or peduncle may exhibit yellowish brown discoloration or black spots. The affected fruits develop hard lumps when ripe. This condition is not eliminated by cooking and renders the fruit unpalatable.

'Bugtok' is caused by a bacterium scientifically known as *Pseudomonas solanacearum* E. F. Smith. 'Bugtok' is a disease that is transmitted by sucking insects, possibly thrips. Infection is introduced through the male inflorescence. The symptoms develop once the pathogen gains entry inside the fruit and its vascular system. Typically, plants infected with bugtok do not wilt or die but they fail to produce marketable fruits thereby reducing the realizable income of the banana farmer.

The effectiveness of salt for 'bugtok' control was first noted by researchers of the Central Mindanao University in Bukidnon led by Dr. Herminio Pava. They found that when common table salt is applied to the stump of recently harvested banana stalks adjacent to stalks bearing new inflorescence, NaCl can completely prevent the appearance of 'bugtok' disease. The technique of bagging of the inflorescence and early debudding (removal of the 'puso') greatly reduces the incidence of bugtok. However, the results of the Pava study showed that it is the application of 0.5 kg of table salt to each plant within five days of flower initiation that completely eliminated 'bugtok'.

More known as an agency for coconuts, the PCA sought to verify the report on salt fertilization, this time, for 'Cardaba' bananas already growing under coconut as an intercrop. In its study, the recently harvested banana stalks adjacent to ones bearing new inflorescence were cut one foot above the ground. One kilogram of NaCl was then placed in a hole made at the center of each cut stump.

Effect of NaCl application on 'bugtok' disease incidence of 'Cardaba' banana under 'LAGT' coconut palms

Thirty four percent of the fruits of the untreated 'Cardaba' bananas became infected with the 'bugtok' disease. There was evidence of some infection in the treated plants but this was much less at 1.4 - 2.7% of the total fruit harvest. Thus, this

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RICE COMPOSITES (rice +corn)
as enriched potential staple

Second to rice, corn is an important crop in the Philippines. Corn, specifically the white variety of Quality Protein Maize (QPM) or "white corn", is a nutritious and potential health food. QPM enhances one's memory because of its thiamin content. It also contains pantothenic acid (a B-vitamin), which helps in the functioning of adrenal glands. Significantly, QPM is an anti-oxidant because of its phenolic compounds. It can protect a person from acquiring degenerative diseases such as cancer and heart ailments. It also contains two essential amino acids – *lysine* and *tryptophan*.

Cheaper to produce and buy as well, white corn, when added to rice, would add million of tons of quality protein in the world supply. More important, it provides the marginalized Filipino households with an enriched potential staple. According to crops expert, white corn gives more calcium, beta carotene, and protein than rice.

A study conducted by Dr. Wilma Hurtada, head of the Food Management and Administration Division of the College of Human Ecology in the University of the Philippines Los Baños (UPLB), titled "Nutritional Content of Rice Composites," aimed to measure the nutritional content of rice, corn, and their combinations.

Dr. Hurtada presented the findings in a technology demonstration during the UPLB-College of Agriculture's Agri-Trade Fair held at the University of the Philippines Diliman. The Bureau of Agricultural Research was one of the sponsors and participants in the event.

Generally, the study showed that proximate composition of rice composites increased with greater concentration of corn since it has greater fat, protein, fiber, and total ash contents except for moisture. Thus, rice composites are more nutritious than rice alone and, therefore, can significantly help fill up the required daily energy and nutrients intake of an individual.

Rice composites are a mixture of rice and corn studied and developed in terms of their nutritional value and palatability, said Dr. Hurtada. "At present, the 70:30 combination (70% rice and 30% QPM) is found acceptable by consumers," she emphasized.

Dr. Hurtada explained that substituting the consumption of rice by 10% corn grits is enough to reduce food insecurity and hunger only if the non-corn eating Filipinos accept rice composite as their staple. She also suggested small-to-medium enterprises (SMEs) to consider rice composite for commercialization which can help increase farmers' earnings. *(Christmas B. de Guzman)*

Dr. Wilma Hurtada of UPLB explains the nutrient contents of rice composites at the Agri-Trade Fair held in UP Diliman.

GAP *...from page 8*

rise in globalization brings both greater opportunities and new challenges because consumers around the world are becoming aware and demanding with regards to food quality and safety.

'Thus, the increase adoption of the GAP certification as a requirement in the export market has pushed many nations to embrace an on-farm food safety system," he added.

Araullo said Mindanao farmers are set to export their first-ever shipment of corn abroad slated early next year.

He therefore pointed out the need to sustain efforts in producing sufficient volumes of safe and high-quality corn for the benefit of consumers, food millers, and processors here and abroad.

The Code of GAP for Corn is a set of consolidated safety and quality standards for the production, harvesting and on-farm postharvest handling, and storage of corn that aims to provide safe and high quality corn to the industry players and to reduce the risk of pesticide and aflatoxin contamination.

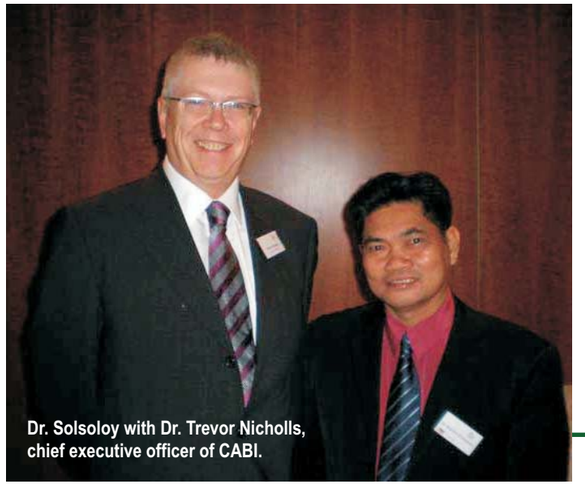
In addition, it consists of recommendations and available knowledge to address environmental, economic, and social sustainability with emphasis on six key areas such as farm location, farm environment, farm structure and facility maintenance, farm practices, workers' health and safety, and farm management.

The GAP on corn will serve the DA in achieving its production target of 6.9 million tons this year, if majority of farmers adopt it.

GAP-Corn emanated from the Philippine GAP for Fruits and Vegetables (GAP-FV) based on the concept of Hazard Analysis of Critical Control Points (HACCP) and quality management principle from farm to table continuum. It was prepared by the Technical Working Group on Corn Quality Management (TWG-CQM) and was presented by BAFPS Director Gilberto E. Layese.

Along with the launching of GAP for corn held at the ITCAF Building of the DA was the awarding of the outstanding quality corn farmers from different regions.

The annual search aims to give due recognition to the country's corn farmers who have made outstanding achievements in their respective areas. *(DA Press Release)*


Dr. Solsoloy with Dr. Trevor Nicholls, chief executive officer of CABI.

Based on the three international meetings, Dr. Solsoloy believes that these could assist DA through BAR in shaping the direction of the Philippine agriculture and fisheries R&D with the cooperation of its partner agencies under the DA-National Research and Development System in Agriculture and Fisheries.

Furthermore, the 2009 financing plan was discussed drawing from the proposals of the Centers and challenge programs in the context of a number of evolving external and internal developments that are likely to affect the financial outcome of the system in 2009.

For the governance and accountability aspect, CGIAR highlighted the activities and initiatives under the Change Management Process. It has conducted and completed several Center External Program and Management Reviews (EPMRs) and Challenge Program External Reviews (CPERs) which served as model for other CPs or other programs in CGIAR going forward. It also provided means to explore and improve the performance measurement system for the efficient monitoring and evaluation activities of the CGIAR Centers and Programs. All activities under the CGIAR system provided an improved and innovative system for the overall orchestration of international agricultural research and development.

Noted in the discussions was the changing of an annual general meeting to a biennial conference where in Dr. Solsoloy made a suggestion that the conference be named as Global Conference for Research and Development (GCARD).

CABI

Aside from Dr. Solsoloy, the CABI meeting was also attended by the Minister of the Philippine Embassy in London. Discussions were focused more on the new revised CABI structure, presentation of the initiative projects on biodiversity, the Chief Executive Officer report, approval of the joint venture company with Royal Holloway and financial update for 2008 and 2009. The Philippines was also voted to be one of the country's that will serve as Board Observer.

CABI, which main task is to improve people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment, discussed its year-in-review performance and accomplishments, plans and programs for 2009, and its strategies to improve the system and network.

The CABI organization and membership have provided a diverse mechanism that delivers its program to its clientele and members through consolidated bioservices, improved project development, forecasting and control, and implementation of mega-projects. These are now further supported by established partnerships with other organizations that are concerned with agricultural research. To do this, CABI's mandate is to provide sustainable approaches to agriculture on continuous fundamental research, development and implement utilization of new technologies, assist farmers with proper integrated pest management choices and innovative approaches to knowledge management that promotes food security.

Based on the three international meetings, Dr. Solsoloy believes that these could assist the Department of Agriculture through BAR in shaping the direction of the Philippine agriculture and fisheries R&D with the cooperation of its partner-agencies under the DA-National Research and Development System in Agriculture and Fisheries (NaRDSAF). Such challenges, initiatives and innovative strategies, and directions will make every key player work for a brighter and better ARD since food is still the basic concern globally and locally.

Dr. Solsoloy emphasized, "let us use agricultural information and knowledge as the basis to improve the lives of people and their communities. Let us reap the R&D outputs such as technologies for the maximum utility of all." (*Marlowe U. Aquino, PhD with reports from Dr. Teodoro S. Solsoloy*)

Dr. Solsoloy with Mr. Francisco Noel R. Fernandez III, minister of the Embassy of the Philippines in London, U.K.

WorldFish, BAR meet to address issues on aquaculture and fisheries R&D


WORLDFISH photo

The WorldFish Center and the Bureau of Agricultural Research (BAR) have agreed to jointly implement a project titled "*Strengthening Partnerships in Aquaculture and Fisheries Research in the Philippines*." This is stipulated in a Memorandum of Agreement (MOA) signed by the two organizations in September 2008 to provide capacity building support. Signatories to the MOA were Regional Director Maripaz L. Perez of the WorldFish Center for East and Southeast Asia and Director Nicomedes P. Eleazar of BAR.

BAR, as a coordinating agency for R&D institutions, has adopted several thrusts in its R&D program. These include: expanding the production-based and enhancing the productivity and profitability in agriculture and fisheries, promoting sustainable resource use along with protecting biodiversity, sustaining global competitiveness of selected high-value export products, and alleviating poverty and empowering people.

Based on the proposal, the development works of the WorldFish Center resulted in significant contributions that can be best shared with BAR and other Philippine-based researchers. This shall further enhance R&D efforts in the key areas in fisheries development.

In lieu of the project, a consultation meeting dubbed *Philippine Partners Meeting: Complementation to address common issues in aquaculture and fisheries research* was conducted on 16 December 2008 at the Seminar Room, IRRI Harrar Hall, Los Baños, Laguna.

Executive Director Rafael D. Guerrero of the Philippine Council for Aquatic and Marine Research and Development (PCAMRD) welcomed the participants. Dr. Perez presented the *Global Drivers of Change: Relevance within the Philippine Setting.* Small group discussions followed with themes on 1) Making resilience a practical concept for improved small-scale fisheries, 2) Sustainable Aquaculture, and 3) Resilience and aquatic resources-dependent livelihoods: Cross cutting issues.

The consultation hoped to strengthen the partnerships of the WorldFish Center with national and regional organizations involved in aquaculture and small-scale fisheries development. Specifically, this served as venue to identify the factors affecting the quality, scope, adoption, and impact of R&D activities and output in small scale fisheries and aquaculture in the country; and develop a common research agenda with partners in the country. *(Ma. Eloisa E. Hernandez)*

GAP for corn launched

The Department of Agriculture (DA) through the Bureau of Agriculture and Fisheries Product Standards (BAFPS) and the GMA-Corn Program recently launched the Philippine National Standard (PNS) Code of Good Agricultural Practices (GAP) for corn, and honored this year's outstanding corn farmers.

Agriculture Assistant Secretary Dennis B. Araullo and concurrent GMA-Corn program national coordinator said the initiatives are part of DA's continuing effort "to make the Filipino corn industry more productive, sustainable, and globally competitive, and the Filipino farmers earning gainfully from their hardwork and perseverance."

Representing Secretary Arthur C. Yap, Araullo said that the

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Story telling sessions on rice, environment wow children


IRRI photo

Reigning Miss Philippines Earth-Fire Kristelle Lazaro, Dyali Justo of the Adarna House, and Philippine Daily Inquirer (PDI) reporter Riza Olchondra wowed some 120 elementary school pupils from Bay and Los Baños, Laguna during story telling sessions on rice and the environment at the International Rice Research Institute (IRRI) on 12 December 2008.

The Philippine Daily Inquirer's "Read-Along" project, in association with the U.S. Agency for International Development (USAID)-Sustainable Energy Development Program (SEDP), U.S. Department of Energy, Fuels4LIFE Movement, and IRRI's Community and Employee Relations Services co-sponsored the story telling sessions.

The project, which received the 2008 Philippine Quill, an award given by the International Association of Business Communicators, promotes the "love of reading among children through storytelling sessions with celebrities and volunteer readers."

Ms. Lazaro read CERS Manager Chat Ocampo's book, *Popong eats his rice,* published by the Department of Agriculture-Bureau of Agricultural Research, while Ms. Justo told *Ang mahiyaing manok* (The shy rooster), a story written by Rebecca T. Añonuevo and Ms. Olchondra read author Victoria Añonuevo's *Ang alamat ng palay* (The legend of palay) published by the Adarna House.

A puppet show by the USAID-SEDP titled *Ecodefenders: Tagapagtanggol ng kalikasan* (Guardians of nature) kicked off the two-hour Read-Along sessions hosted by Inquirer Libre editor-in-chief Chito de la Vega.

The Inquirer quoted Deputy Director General for Operations and Support Services William G. Padolina as saying: "It's good that the Inquirer is reviving the love for reading among kids because it's very important in their education."

"The book (*Popong eats his rice*) will hopefully make children appreciate the value of rice, that it doesn't merely come from the grocery or supermarket," Ms. Ocampo told Inquirer.

"It is very inspiring to tell stories to children. This is not a waste of time for me even if I come from Manila. It is a privilege to spread environmental stories because not all children are aware of what they can do in saving Mother Earth. Through these stories, they become aware of issues on global warming," Ms. Lazaro later told *Sandiwa*.

"In behalf of the USAID-SEDP, we thank the Inquirer Read-Along team for inviting us in IRRI. We maximize this kind of opportunity to share the ecodefenders' story with children," SEDP team head Diwata Paredes said.

"The kids are behaved, receptive, and cooperative. Everything is organized and the venue is suited for story telling," observed Inquirer research head Minerva Generalao.

The school children received a free copy of Ms. Ocampo's book, as well as prizes from the Riceworld Bookstore during the program's quiz portion. They also received free coloring books and crayons from SEDP.

The CERS received certificates of appreciation from the PDI signed by editor-in-chief Letty Jimenez Magsanoc, Eco Defenders Club, and Fuels4LIFE Movement for hosting the Inquirer Read-Along in IRRI.

This is the first time that the CERS has tied up with the Philippine Daily Inquirer in this project, although it has conducted story telling sessions on Popong eats his rice in almost all public elementary schools in Los Baños and Bay during the past several months. (*IRRI Bulletin)*