



BAR, PhilRice, SEARCA boost RP agri through systematic analysis of productivity growth



(L-R, front row) SEARCA Dir. Arsenio M. Balisacan, BAR Dir. Nicomedes P. Eleazar, and PhilRice Exec. Dir. Leocadio S. Sebastian sign the MOU of the three-year project, *Nature, Sources, and Causes of Productivity Growth in Philippine Agriculture*. Also in the photo are (L-R, back row): BAR Asst. Dir. Teodoro S. Solsoloy, BAR-PDD Head Carmencita V. Kagaoan; BAR-MISD Head Marlowe U. Aquino, SEARCA ConSrv Head Mercedita A. Sombilla, PhilRice Chief Science Research Specialist Sergio R. Francisco, and BAR-AFPRU Head Braulio B. Tamayo.

Photo by Nikki Del Rosario

BAR and PhilRice, will look into the nature, sources, and causes of productivity growth in Philippine agriculture and support advancement in empirical work in a time of largely inadequate and presumably poor quality data.

The project will document what has been done in the past that contributed to a robust agriculture sector, particularly from the 1960s to the early 1980s, and determine the reasons for its sudden decline after the green revolution accompanied with the sluggish implementation of succeeding agriculture and agriculture-related programs such as the Comprehensive Agrarian Reform Program (CARP).

Lessons learned from the past are used in designing future programs to help meet the Department of Agriculture's (DA) goals of developing two million hectares and creating two million jobs as well as reducing the price of wage goods.

Heads of the three agencies, namely: BAR Director Nicomedes P. Eleazar, PhilRice Executive Director Leocadio S. Sebastian, and SEARCA Director Arsenio M. Balisacan have formally signified their commitments in an event dubbed as "Strengthening Growth Linkages Towards Competitive Philippine Agriculture" held on 27 February 2007 at the RDMIC Conference Room of the BAR

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To address the decades' long problem of a declining agricultural productivity in the Philippines, the Bureau of Agricultural Research (BAR), the Philippine Rice Research Institute (PhilRice), and the Southeast Asian Regional Center for Graduate Study and Research in Agriculture

(SEARCA) pooled their resources in coming up with a program to help revive, if not, enhance and sustain the agriculture sector. The three-year project, "Nature, Sources, and Causes of Productivity Growth in Philippine Agriculture," which is spearheaded by SEARCA and co-funded by

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DA sets 10 priority commodities for 2007 Philippine agri and fishery

The Department of Agriculture (DA) has set its priority commodities both for the agriculture and fishery sectors in view of its overall goal of increasing the profitability of stakeholders (production- and income-wise) which must be reflected in major programs and activities of the Department.

Specifically, the 10 priority commodities identified are *palay*, hogs, chicken meat, municipal fishery, aquaculture, corn, coconut, commercial fishery, banana, and sugarcane.

This was announced during the recent DA Management Committee (ManCom) Meeting on 19 February 2006, at the DA Building.

The current focus is on the entire supply chain, from production to market. Thus, it is inevitable that the current working framework should go hand in hand across all commodities, particularly in terms of planning DA programs and resources.

In the improvement of the entire supply chain, meaning from the

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BAR Chronicle is the official monthly publication of the Bureau of Agricultural Research (BAR) of the Department of Agriculture (DA), which is mandated to ensure that all agricultural research is coordinated and undertaken for maximum utility to agriculture.

This publication provides regular updates on BAR's activities as the country's national coordinator for agriculture and fisheries R&D; and highlights features and news articles concerning NaRDSAF-member institutions.

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ACAP ensures support to DA programs

photos by OP-PAC



CHED Chair Carlito Puno (top left) and ICRISAT Director-General William Dar (top right) address ACAP delegates. Vital issues were discussed during an open forum with guests and delegates (lower photos)

The recent developments in the Department of Agriculture (DA) particularly on enhancing the agriculture and fisheries sectors for more clientele and development-oriented initiatives were considered as the entry points in the complementation efforts from all sectors.

The Association of Colleges of Agriculture in the Philippines (ACAP) recently held their 2007 Biennial National Convention at the Pampanga Agricultural College, Magalang, Pampanga.

Incoming president, Dr. Zosimo M. Battad of the Pampanga Agricultural College (PAC) emphasized in his address that they will do their part in making agriculture, fisheries, forestry and natural resources more relevant and responsive to the challenges and opportunities faced by its member-agencies, partners, and clientele.

ACAP is a professional organization of academicians, researchers, extensionists, and development practitioners from all corners of the country. It is composed of state universities and colleges offering agriculture and its related fields

with highly motivated and goal/output-oriented programs and services.

Among its programs are research and development activities on identified DA priority thrusts, disciplines and commodities. Improvements in agricultural curricula to make them attractive to students and people with high level of interest in professionalizing agriculture are undertaken. Appropriate educational programs and activities to enhance agribusiness activities by making use of research results and technologies that will increase production and profits of farmers/fisherfolk, processors, and stakeholders.

Dr. Battad emphasized that his term will ensure agricultural development the center of the association's effort through collaborative and complementary programs at the local, regional and national including international levels. A continuous development of agriculture and fisheries programs and projects, establishment of partnerships including linkage and networks, and sustainable professional growth that will enable its members to be professionally competitive with creativity and interactive endeavors. (Marlowe U. Aquino, Ph.D.)

Leader of USDA's RDE agency visits BAR for possible collaborative R&D projects

photo courtesy of USDA



Dr. Catalino A. Blanche

An official of a unit of the United States Department of Agriculture (USDA) visited the Bureau of Agricultural Research (BAR) on 15 February 2007 for possible cooperative agreements between USDA and BAR.

Dr. Catalino A. Blanche, national program leader of the Natural and Environment Unit of the USDA's Cooperative State Research, Education, and Extension Service (USDA-CSREES), met with BAR Assistant Director Teodoro S. Solsoloy at the Conference Room of the RDMIC Building to explore possible cooperation in the areas of human resource development and R&D facility improvement.

Dr. Blanche was accompanied by Philippine Agricultural Attaché to Washington Victoriano B. Leviste.

As the head of the Natural and Environment Unit of the USDA-CSREES, Dr. Blanche is in charge of various research programs and activities, including what he

termed as collateral responsibilities such as education and extension of land grant institutions collectively known in the US as 1890 Agroforestry Consortium. As such, he is looking at the prospect of providing assistance to Filipino scientists who want to advance their knowledge through graduate programs in the US or through fellowships in scientific exchange program.

He is also optimistic on the possibility of improving research facilities in the country once access to the stockpile of surplus research equipment up for disposal from various USDA research centers is worked out.

Dr. Blanche is a BS Wood Science and Technology and a Master's in Agriculture graduate from the University of the Philippines Los Baños (UPLB). He holds another master's degree in Forest Resources (Ecology/Biometrics) from the University of Georgia and a doctorate in Forestry from the Mississippi State University. (Rudyard R. Roxas)

BAR sets 2007 National and Regional Technology Forums

After the successful holding of the First Sweet Sorghum Technology-Investment Forum in January 2007, the Department of Agriculture (DA), through the Bureau of Agricultural Research (BAR), is again on its feet in making technologies work for agriculture, fisheries, industry, people and communities.

Immediately after the presentation of the plans and activities of the National Technology Commercialization Program (NTCP), BAR is eyeing more interactive and participative national and regional technology forums.

Now on its third year, the national technology forums, which will again coincide with the major activities of DA and BAR, will surely make technologies relevant and appropriate for utilization and application, promotion, and commercialization.

The increasing number of technologies sourced and shared by DA partner agencies will keep the program moving. This will also expand the its

regional initiatives by consolidating efforts on marketing and agribusiness activities, research and development breakthrough and information dissemination and encouraging investors on competitive agriculture and fisheries goods.

This year's theme, "Bridging Technologies and Investments for Competitive Agriculture and Fisheries Business," will highlight the suitability and sustainability of developed technologies for competitive business opportunities. DA's major goal of marketing Philippine agriculture and fisheries products with superb quality and competitive edge will certainly place and even create market niches not only domestically but also internationally.

The technology commercialization program activities include technology sourcing, packaging, promotion and upscaling all year round, including national technology forums in May, August and October 2007. The scheduled regional technology forums will be held in April for Luzon B

photo by Nikki Del Rosario



Cluster (Regions III, IVa and IVb and V) to be held in Naga City; Luzon A Cluster (I, II and CAR) to be held on 7 June 2007 in Baguio City; Visayas Cluster (Regions VI, VII and VIII) to be held on 30 September 2007 in Tacloban City, and Mindanao Cluster (Regions IX, X, XI, XII, ARMM and CARAGA) to be held on 6 September 2007 in Cagayan de Oro City. (Marlowe U. Aquino, Ph.D)

DA-BAR, ICRISAT, and UPLB sign MOU for sweet sorghum project



photo by Nikki Del Rosario

(L-R) UPLB Chancellor Luis Rey I. Velasco, ICRISAT Director General William D. Dar, and BAR Director Nicomedes P. Eleazar sign the MOU for sweet sorghum project. At the background are: (L-R) PU Head Joell H. Lales, TCU Coordinators Anthony B. Obligado and Digna L. Sandoval, and BAR Technical Adviser Santiago R. Obien.

Two government agencies and an international institute signed a memorandum of understanding (MOU) to implement a project in the production and development of hybrid varieties of sweet sorghum.

Signatories to the MOU were the Department of Agriculture-Bureau of Agricultural Research (DA-BAR) represented by Director Nicomedes P. Eleazar, the International Crop Research Institute for the Semi-arid Tropics (ICRISAT) headed by Director General William D. Dar, and the University of the Philippines Los Baños (UPLB) headed by

Chancellor Luis Rey I. Velasco.

The three signed the memorandum of understanding on 6 February 2007 at the RDMIC Conference Room, Elliptical Road, Diliman, Quezon City. Under the agreement, DA-BAR, ICRISAT, and UPLB will promote sweet sorghum in the Philippines as a major feedstock for ethanol.

Witnesses were Dr. Enrico P. Supangco, vice-chancellor for research and extension of the UPLB; Dr. Roberto F. Rañola, Jr., vice-chancellor for administration of the UPLB; Dr. Jose E. Hernandez, director of the Institute of Plant Breeding (IPB); Dr. Santiago R. Obien, technical

adviser of BAR; Ms. Digna L. Sandoval and Mr. Anthony Obligado, coordinators of the Technology Commercialization Unit (TCU) of BAR; and Mr. Joell H. Lales, head of the Planning Unit (PU) of BAR.

The tripartite agreement focuses on conducting strategic research on hybrid development of sweet sorghum and pigeon pea with UPLB as the lead implementing agency. DA-BAR, with its mandate to support agriculture and fisheries R&D activities of the government, shall serve as coordinating and funding agency for sweet sorghum and pigeon pea activities.

ICRISAT, one of the 15 members of the Consultative Group on International Agricultural Research (CGIAR), has the research and development expertise in the breeding of sweet sorghum and pigeon pea varieties and hybrids.

The three parties agreed to collaborate through joint planning and implementation of the project.

Sweet sorghum was introduced by ICRISAT with initiatives from DA-BAR to produce open-pollinated varieties (OPV) in collaboration with the Mariano Marcos State University (MMSU) in Batac, Ilocos Norte.

DA-BAR now supports propagation of hybrid varieties of sweet sorghum. (*Ma. Eloisa E. Hernandez*)

DA sets priority...from page 1

production side down to the market area, the Department is instructed to infuse its various interventions through the Five Developmental Pillars for Agriculture and Fisheries. These include: 1) irrigation facility; 2) postharvest and storage; 3) market access; 4) R&D education, and extension; and 5) credit facilitation.

It is hoped that through these interventions, projected profitability of concerned stakeholders, particularly those of the marginalized farmers and fisherfolk, is ultimately achieved. All concerned agencies must also

contribute to this overall goal with a business sense.

The Bureau of Agricultural Research (BAR) Director Nicomedes P. Eleazar represented the R&D education and extension sector.

BAR will support these priority commodities set by the Department, particularly in implementing its R&D agenda and programs into specific activities. These programs must be in line with the Five Developmental Pillars for Agriculture and Fisheries, and with specific focus on the 10 poorest provinces of the country, namely: Maguindanao,

Zamboanga del Norte, Lanao del Norte, Masbate, Mountain Province, Surigao del Norte, Agusan del Sur, Zamboanga Sibugay, Camarines Norte, and Sarangani.

Prioritization and expanded investments particularly for the 10 poorest provinces, have also been strongly emphasized by President Gloria Macapagal-Arroyo during the recent ASEAN and China Summit in Nanning with Chinese PM Wen Jiabao. She emphasized the need for investment opportunities for these poorest provinces of the country. (*Rita T. dela Cruz*)



photo by Nikki Del Rosario

Quisumbing shares key elements to establish successful research org

Strong political will, provision of an enabling environment, and establishment of a research endowment fund.

These are the three key elements for the establishment of a successful and sustainable national research organization as shared by Dr. Eduardo C. Quisumbing during the 2nd Seminar Series for this year conducted by the Bureau of Agricultural Research (BAR) on 9 February 2007 at the RDMIC Lobby, Visayas Ave., Diliman, Quezon City.

Dr. Quisumbing, a former Department of Agriculture (DA) research director, was the resource person on the topic, *"Establishing Agricultural Research Capacity: Experiences from Selected Developing Countries."*

The DA strengthened its research capacity through the Agricultural Support Service Project (ASSP) financed by the World Bank. Under ASSP, an Agricultural Research Office (ARO) was established to pilot a research priority setting, coordination, and management system within DA. By the completion of ASSP, BAR was established.

Based on his experiences gained in working in many developing countries (Somalia, Kenya, Tanzania, and Uganda), there are three key elements in the establishment of a successful and a sustainable national research organization.

A strong political will is the top consideration. Institutions should be freed from the political tug-of-war by various departments.

funds made available through the normal budgetary process," he added.

Dr. Quisumbing also mentioned that a strong political will would lead to a necessary enabling environment for the institution to function. Such enabling environment includes the establishment of an organizational structure with highly trained and motivated staff to develop, implement and manage the national agricultural plan.

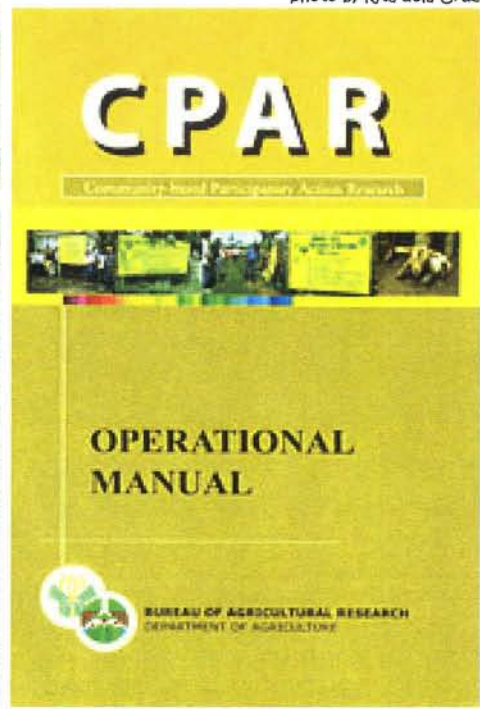
In conclusion, he encouraged agriculture agencies to devote a large percentage of their efforts on adaptive, problem-oriented research on-farms and on-stations to address constraints to production of major crop-livestock production systems and to some extent second-generation problems of distribution and marketing.

Dr. Quisumbing, a Ten Outstanding Young Men (TOYM) awardee in 1978 for the Outstanding Achievement in Agricultural Development, is a former Agricultural Research Scientist in World Bank (1986).

He was credited for playing a major role in the establishment and strengthening of agricultural research systems in Uganda, Kenya, Tanzania, and Sudan, and for fostering and promoting effective mechanisms in the collaboration of the research system with the agricultural extension services and agricultural universities. He was also recognized for the improvement of agricultural support services in Ethiopia, Eritrea, Mozambique, Somalia, Zambia, Zanzibar and Zimbabwe. (Ma. Eloisa E. Hernandez)



photo by Richard Bernardo



BAR sets guidelines in availing of CPAR grants

To stimulate and enhance the development of enterprises and agribusiness ventures in farming and fishing communities, the Bureau of Agricultural Research (BAR) has instituted and is presently implementing an innovative approach to Research, Development and Extension (RDE) called Community-based Participatory Action Research (CPAR) program.

This year, BAR has set new guidelines to avail of CPAR grants.

The Research Coordination Division (RCD) of the Bureau crafted the guidelines in preparation of the drafting of proposals of the Regional Integrated Agricultural Research Centers (RIARCs) and the Regional Fisheries Research Development Centers (RFRDCs).

Partner-agencies include the Agricultural Training Institute (ATI), Local Government Units (LGUs) and the Regional Field Units (RFUs) composed of the RIARCs, RFRDCs, and Research Outreach Stations (ROS).

An activity design and proposal covering the first phase will be prepared for the conduct of the Participatory Resource Appraisal (PRA) process.

Based on the PRA results, CPAR action planning executed by the DA-RIARCs and RFRDCs in collaboration

with ATI, LGU's, NGO's, farmer-fisherfolk representatives and other partner agencies, the completed CPAR project proposal should incorporate the various interventions and RDE projects to be implemented in the site.

Proposals will then be reviewed and approved based on the existing needs and priorities of the area and must be in consistent with DA's twin goals.

BAR, ATI, LGUs and RFUs will work hand-in-hand on CPAR activities on three stages: 1) pre-implementation (conduct of PRA); 2) implementation of CPAR project (technology demonstration, on-farm trials, capability building activities, extension support services); and 3) project management (monitoring and evaluation and financial management).

CPAR is a location-specific research cum extension that deals with improved farming systems technologies for specific micro agro-climatic environment within province/municipality. Through this approach, BAR enjoins the active participation of the community to be responsive, dynamic and systematic in their management of production. Also, BAR encourages the application of the

value of information-based decision-making for an organized product management system towards agribusiness enterprises.

The CPAR Grant aims to: 1) enhance the role of RD&E through technology transfer to improve production management system; 2) develop strategies for effective integration of support services for enterprise and agribusiness development; and 3) institutionalize active community participation in the overall management of farm & coastal resources. (Ma. Eloisa E. Hernandez)

For more information, please visit <http://www.bar.gov.ph>

The prescribed formats and guidelines can be downloaded from BAR's website.

For those who are unable to download, they may request via email at: barrdegrants@bar.gov.ph.

Proposals together with the necessary attachments must be submitted through regular mail or courier addressed to DA-BAR c/o PDD.

Electronic copies of proposals may be sent via e-mail at: barrdegrants@bar.gov.ph

BAR centralizes linkage in R&D info system

Information and knowledge that are well managed is indispensable in every organization. This is an imperative and an asset to an organization that strives to be adept with the world's latest innovations. But sharing and making them immediately available both for clients' use anytime is another thing.

To overcome this, the Bureau of Agricultural Research (BAR) is implementing the project, "Agriculture and Fisheries R&D Information System (AFRDIS) Enhancement Project."

Generally, the project aims to improve the quality of knowledge management in agriculture and fisheries R&D through information and communications technology.

Specifically, it has three main objectives: 1) enhance R&D information system databases and networking among R&D institutions and concerned stakeholders; 2) promote the exchange and dissemination of R&D information and knowledge through central access to information that is localized in decentralized databases; and 3) implement efficient M&E system on



photo by Richard Bernardo

agriculture and fisheries R&D through the application of Internet.

AFRDIS is a comprehensive information system designed to strengthen the knowledge management capabilities and capacities of the National R&D System for Agriculture and Fisheries (NaRDSAF). The System serves as a virtual repository of knowledge that provides access across a coordinated network of institutions, systems, and data banks. Since it is a web-based

information system, it functions as a gateway to the national information resources with specific regional focus and provides information services to various types of end-users, anywhere, anytime.

The organizational setup of AFRDIS comprises of three levels with BAR at the helm acting as the national reference center followed by the nodal centers and the R&D institutions within the cluster area of a nodal center. *(Rita T. dela Cruz)*

Guidelines for availing of CPAR grants

The CPAR Grant aims to:

- enhance the role of RD&E through technology transfer to improve production management system;
- develop strategies for effective integration of support services for enterprise & agribusiness development; and,
- institutionalize active community participation in the overall management of farm & coastal resources.

The DA-RIARCs/RFRDCs will lead the preparation of the proposals following and using the prescribed guidelines and format. There will be two phases for the crafting of proposals:

1st Phase: PRA Proposal

After the site identification, the DA-RIARCs/RFRDCs will prepare an Activity Design & Proposal for the conduct of the Participatory Resource Appraisal (PRA) process.

2nd Phase: CPAR Detailed Proposal

As a result of the CPAR Action Planning done by the DA-RIARCs/RFRDCs in collaboration with ATI, LGU's, NGO's, farmer-fisherfolk representatives and other partner agencies, the full CPAR project proposal should incorporate the various interventions and RD&E projects to be implemented in the site based on the PRA results

Screening & Endorsement of Proposals

The proposal should be reviewed by the RIARCs'/RFRDCs' In-House Review Team. It will be recommended for approval by the RTD for R&D (agriculture)/Assistant Regional Director (fisheries) and endorsed by the RED (agriculture)/BFAR Regional Director (fisheries) to DA-BAR.

Approval by BAR

Final approval of the CPAR project proposal which is a product of the participation of LGUs, ATI and the community shall be based on the existing needs and priorities of the area and coherent with DA goals.

PEN commits support to DA programs

Photo courtesy of PEN

In the recent Philippine Extension Network, Inc. (PEN) Second National Agriculture, Fisheries, Forestry and Natural Resources Extension Symposium held on 08-09 February 2007 at the Heritage Hotel, Roxas Boulevard, Pasay City, PEN President Virginia R. Cardenas emphasized their commitment to support the different Department of Agriculture (DA) programs. Related to this year's theme, "*Extension and Entrepreneurship: Strengthening the Platforms for Agriculture, Fishery, Forestry and Natural Resources Development*", PEN programs are geared towards technology promotion, commercialization, entrepreneurial and professional initiatives. These initiatives are implemented to be dynamic and responsive towards enterprise development and agribusiness ventures. As a professional organization, PEN will promote professionalism between and among key players of agriculture, fisheries, forestry and natural resources programs. Through the development-oriented members, PEN is pumped up to be part of the achievement of DA goal to make our farmers and fisherfolk productive, increase their income while providing an avenue for information and technology exchange through effective and efficient extension and development sources. (Marlowe U. Aquino, Ph.D.)



(L-R) Winners of the 2007 PEN Awards: Glen Y. Ilar of DA-PhilRice, Outstanding Research Paper for Extension; Norma B. Lagmay, provincial agriculturist, Outstanding Extension Project for Ilocos Norte; and Marlon P. Tobias, provincial agriculturist, Laguna Outstanding Extensionist. All winners were provided with a plaque and cash prize.

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Building. Attendees include: Dr. Mercedita A. Sombilla, manager of the Consulting Services Department, SEARCA; Dr. Lorna C. Malicsi, head of the Knowledge Management Unit, SEARCA; Dr. Sergio R. Franciso of PhilRice; Dr. Teodoro S. Solsoloy, assistant director, BAR; Dr. Carmencita V. Kagaoan, head of Programs Development Division, BAR; Dr. Marlowe U. Aquino, head of Management Information Systems and Information Division, BAR; and other BAR key staff members.

Dr. Balisacan who gave a brief presentation about the project, said that

issues/themes, journal articles, and policy briefs.

He emphasized that the project will not only involve senior experts and advisers, but will also encourage the cooperation of graduate students working or are about to work on their theses/dissertations. He stressed that young researchers are more creative, if not think more out of the box.

Data generated from the project can be used in wider applications, thus, increase the knowledge-base of productivity/growth

Data generated from the project can be used in wider applications, thus, increase the knowledge-base of productivity/growth studies in Philippine agriculture.

the team is hoping to come up with various knowledge products that will be useful to all major stakeholders of the agriculture sector. These include a book on agricultural productivity, monographs on subsectoral and cross-cutting

studies in Philippine agriculture.

Dr. Balisacan expressed the hope that internationally renowned experts in the areas of investigation, primarily on productivity growth measurement, would be tapped.

According to him, productivity growth should come from technological change, rather than increasing farm inputs.

After the presentation, members of the media and the DA were given an opportunity to raise questions for Dr. Balisacan and the project team.

The activity was capped by the signing of the memorandum of agreement (MOA) among the heads of BAR, PhilRice, and SEARCA.

In his closing speech, Dr. Sebastian showed his enthusiasm in joining the project and mentioned how PhilRice will benefit from the study. The results will give PhilRice and other involved agencies comprehensive data that are not just significant, but most important, reliable.

He said that pooling of resources would improve the sharing of relevant information as inputs to research and ultimately beneficial for policymakers. Dr. Sebastian was positive that the findings of the project can change the way program and planning is done at the Department. Through the results of this study, programs will be supported with solid evidence and data that will reflect the true situation of Philippine agriculture. (Jude Ray P. Laguna)

photo by Nikki Del Rosario

RP to attain corn sufficiency in 2008

by Rjta T. dela Cruz



DA Assistant Secretary Dennis B. Araullo

The Philippines can attain self-sufficiency in corn in 2008. This was the optimistic projection made by Agriculture Assistant Secretary Dennis B. Araullo, concurrent director of the Department of Agriculture (DA) GMA Corn Program during the "Corn R&D Annual Review and Planning Workshop" conducted by the Bureau of Agricultural Research (BAR) at the Conference Room, National Seed Quality Control Services (NSQCS), Bureau of Plant Industry (BPI), Diliman, Quezon City on 21 February 2007.

The workshop was held to review and evaluate the accomplishments of the corn RDE program nationwide and to plan the implementation of corn R&D projects for 2007.

Coping with the demand for feed grain

Corn is an important crop in the Philippines both as a livestock feed and a staple food, as well as a raw material for starches and sugars used in food processing and other industries.

Over the years, the government has been keen in making an effort to supply the farmers with cheap, high-quality seeds. However, due to global competition for increased production and the overwhelming superiority of hybrids developed in Western countries that continue to dominate the world corn seed markets. This placed the country in an awkward status.

The Philippines is one of the 11 developing countries and one of the first countries in Asia to provide and adopt genetically modified (GM) crops. Although there has been an increase in production, the demand for corn is still high. Even though the country is considered a major producer, 20 percent of feed corn is still imported.

The demand for feed grains has been increasing over the past decade, owing

to the growth of the domestic livestock industry. This higher demand has been chiefly answered with an increase in imports.

Corn as a priority in R&D

Corn is one of the priority commodities under Goal 1 of the Department of Agriculture's Twin Goals. This is along with other high value commercial crops (HVCC) such as mango, vegetables, sugar, abaca, corn, livestock, and fisheries. The twin goals of DA are: 1) identify and pursue agribusiness development of two million hectares of agriculture and fisheries areas; and 2) reduce costs of wage goods through productivity enhancement, more efficient logistics, and improved retailing linkage.

As such, corn is also a priority commodity for Research and Development (R&D) for 2004-2010 of BAR, being the DA's national coordinator for research and development in agriculture and fisheries.

The Bureau has released funding support to DA-Regional Field Units (RFUs) and to the Regional Integrated Agricultural Research Centers (RIARCs) for the specific conduct and implementation of corn R&D projects.

Comprehensive R&D program

Assistant Secretary Araullo said that in order to attain sustainability in corn production, the country must have a comprehensive corn R&D programs. He

emphasized that the problem often lies in the implementation of projects. He underlined the importance of profitability to the corn stakeholders. Performance measure of corn projects must also focus on the farmers' income (i.e. did it improve their lives or not?).

He also mentioned that the industry is mostly focus on the yellow corn. He challenged the R&D sector to also give attention to white corn. Information such as where does the country's supply for white corn goes, specifically on production, distribution, usage, surplus, and other studies.

"The corn sector must be tied up with the livestock sector," Asec Araullo said. This is because the livestock sector is the number one market of the corn industry.

To date, 28 corn projects have been funded by BAR since its inception in April 2006. These projects include: 11 projects on seed systems, 12 projects on fertilizer trials, and 5 projects on post production and marketing systems and other areas.

After 10 months of implementation, these projects were assessed to evaluate their performance and status.

The review is critical in providing the necessary information on whether the corn sector is going on the right direction and is tracking successful key points that could be used for future activities and directions for this year's strategies and implementations.

photo by Richard Bernardo



Participants during Corn R&D Annual Review and Planning Workshop.

BAPNET in 2007:

On the trail of an elusive banana killer

by Victoriano B. Guiam

photos by INIBAP

The subject in question may have gone underground anywhere in the Asia-Pacific region, from India to Australia, biding its time before striking again."

The language may be something out of a detective novel. But, in a nutshell, it describes the bit of grim news that confronted the participants in the recently held Banana and Plantain Network (BAPNET) meeting in exotic Cambodia.

Gathered in the Khan Dangkor District in Phnom Penh on 22-25 January 2007 were 18 top banana experts and authorities from 12 countries in the region (Vietnam, Thailand, Taiwan, Sri Lanka, Philippines, Papua New Guinea, Malaysia, Indonesia, India, China, Cambodia, and Australia). The Cambodian Agricultural Research and Development Institute (CARDI) headed by its director, Dr. Men Sarom, was the host of the 5th meeting of the BAPNET Steering Committee.

The BAPNET Steering Committee is composed of representatives of 15 countries and Dr. Agustin Molina, regional coordinator for Asia-Pacific of the International Network for the improvement of Banana and Plantain (INIBAP). The Philippines is an exception in that it has two representatives from the Bureau of Agricultural Research (BAR) and the Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD). Also in attendance were the Philippine-based BAPNET Secretariat (from INIBAP, Asia-Pacific Office) and a resource person from Bioversity International (the new name of the International Plant Genetic Resources Institute or IPGRI). Absent in the meeting were members from Bangladesh, Myanmar, and the Secretariat of the Pacific Community.

The Steering Committee (SC) agenda revolved around reviewing three major priority areas that were identified in previous BAPNET meetings: IPM; *Musa* conservation and use; and capacity building and information development and exchange. A lengthy discussion was devoted to reviewing BAPNET's regional strategy on *Fusarium* wilt, a known scourge of banana, with the objective of prioritizing current and future collaborative *Fusarium* R&D activities.

Of particular concern was the dangerous *Fusarium* wilt Race 4.

The pathogen responsible for *Fusarium* wilt (also known as Panama disease) is the soil-borne fungus, *Fusarium oxysporum* f. sp. *cubense* (also known as *Foc*). It was first recognized in 1874 in Australia.

Fusarium wilt was first detected in Asia in the early part of the twentieth century: 1911 in India, 1916 in Indonesia (Java), 1920 in the Philippines, and 1953 in Malaysia. By the 1950s, the disease had reached such epidemic proportions that it is considered one of the most destructive plant diseases in recorded history. *Fusarium* wilt was responsible for destroying many commercial plantations of the once popular and widely grown variety, 'Gros Michel', which has since been replaced by the Cavendish variety.

The *Foc* fungus is soilborne and has persisted for many decades. It also spreads efficiently in water. Infection occurs when the pathogen penetrates the roots of the banana plant. The fungus then invades the xylem vessels appearing as a reddish-brown discoloration and, if not blocked by vascular occluding responses of the host, advances into the corm.

Eventually the stem is colonized and above-ground symptoms appear. The symptoms may also include thin pseudostems, small bunches and poorly filled fingers with atypical yellowing and wilting of the leaves. The oldest leaves initially turn bright yellow and wilt. Inner portions of leaf sheaths may also be flecked with a reddish-brown discoloration. Green leaves may also collapse and leaf sheaths at the base of the pseudostem may split.

As the disease progresses, younger and younger leaves are affected until a skirt of dead leaves surrounds the base. Affected plants eventually die after a



Fusarium wilt in banana

few months.

Fusarium wilt may be found in all banana growing areas but it previously did not affect all or most varieties until the emergence of the broad-ranging *Foc* Tropical Race 4.

The extent of damage and losses from *Fusarium* wilt can vary from a few percent to complete destruction of a particular farm depending on the location, cultivar, duration of cultivation and the presence or absence of Tropical Race 4. Initially two important races of *Foc* were recognized (there actually are dozens of *Foc* races that affect a variety of plants).

In the banana business, *Foc* is conventionally classified into four pathogenic forms known as "Races". Race 1, which destroyed the Gros Michel plantations, also attacks many local cultivars in Asia; Race 2 affects specific cooking bananas; Race 3 attacks *Heliconia* spp., which are ornamental plants related to bananas; and Race 4 affects a wide range of cultivars, including Cavendish and cultivars susceptible to Race 1 and 2. An extremely virulent strain of Race 4, known as 'Tropical Race 4', also exists and has caused substantial production losses for commercial and subsistence farmers.

In 1977, the latest race appeared in Taiwan that attacked Cavendish bananas. Since then, Tropical Race 4 has been found in other Asian locations and is a threat to the entire banana industry. Tropical Race 4 has the capacity to affect banana varieties unaffected by other *Foc* races. Of immense importance is its ability to infect Cavendish types of banana (AAA). The AAB varieties, such as the Philippines' *latundan*, are said to

be highly susceptible.

Various control measures have been employed to combat or manage the disease. *Foc* cannot be effectively managed with fungicides owing to its persistence. Other methods that have been tried are the use of disease-free tissue culture planting material, destruction of diseased plants, sanitary measures and practices, use of tolerant or resistant variety, intercropping, biocontrol and other integrated management methods. In Asia, the success rate of these measures varies from country to country.

Elsewhere, research efforts have focused on understanding the disease and the organisms and to find ways and means to reduce losses and sustain banana cultivation. In the past 10 years, significant progress has been made by researchers in various countries towards identifying options for managing the disease. However, these remain to be validated and adopted by smallholder farmers. Options include the introduction of disease-resistant varieties such as those available from the INIBAP genebank, selection of resistant clones (somaclonal variants) through participatory approaches, and disease management approaches based on biological control and crop husbandry.

Taiwan has successfully used somaclonal variation to breed Cavendish bananas resistant to *Foc* Tropical Race 4. The new clone 'Formosana' has displayed high resistance to Race 4.

In the Northern Territory of Australia, the use of disease-free planting materials and good farm practice have so far prevented the spread of the disease to other major banana-producing areas. Still, the early and accurate diagnosis of the disease, prevention of its spread and the deployment of management strategies are strategic to whatever options are considered.

With *Fusarium* wilt's deserved reputation as one of the most devastating diseases of bananas, it is a major concern in the Asia-Pacific region. Reports of severe infection caused by the Tropical Race 4 prompted INIBAP to organize a training in 2006 to enhance the capacity of *Fusarium* wilt researchers in the region and to develop action plans in carrying out survey and characterization of *Foc*.

On 24-28 April 2006, the International *Fusarium* Wilt Diagnosis and Characterization Training Workshop was conducted in Serdang, Malaysia by INIBAP in collaboration with the Malaysian Agricultural Research and Development Institute (MARDI), the Forestry and Agricultural Biotechnology Institute (FABI)/University of Pretoria in South Africa and the Queensland Department of Primary Industries and Fisheries (QDPI&F) in Australia. This was attended by 25 participants from Bangladesh, Cambodia,



Participants from the 5th Banana Asia Pacific Network held on 22-25 January 2007 at the Khan Dangkor District, Phnom Penh, Cambodia. The Philippines was represented by BAR-IRU Head Victoriano B. Guiam (left, back row) and PCARRD-Crops Research Division Senior Science Research Specialist Edna A. Anit (2nd from left, back row).

China, India, Indonesia, Malaysia, Philippines, Papua New Guinea, Sri Lanka, Thailand, Vietnam, Fiji, Taiwan, Costa Rica, and Cuba.

Proposed R&D activities include the following:

- Survey of the extent of *Fusarium* wilt incidence in collection of samples for identification in each country and mapping out *Fusarium* wilt occurrence in the region and within each country;
- Characterization of samples (VCG and DNA analysis);
- Establishment of national/ regional/ international repository centers (*Foc* library);
- Standardization of inoculation, pathogenicity/ resistance evaluation protocol; and
- Identification and evaluation of disease management.

Knowing where in the Asia Pacific Region the *Fusarium* wilt Tropical Race 4 may be found is vital. An inter-country survey is a basic requirement. For as long as its occurrence is not monitored, it remains a threat for both plantation and subsistence banana farms in the countries in the region. In this light, the representative of Indonesia shared their progress in the implementation of their *Fusarium* wilt project with the SC members.

The Indonesian project, funded by the Australian Centre for International Agricultural Research (ACIAR), brings together the collective expertise and most advanced technologies developed in the past 10 years. The approach features the work of national agricultural systems in Indonesia and Papua New Guinea and

banana farmers/growers on the ground in Indonesia to build capacity and customize available technologies for use at local and national levels. The emphasis is on building coordinated national strategies for an already-affected country (Indonesia) and a threatened country (PNG) that provide for a range of management measures, (i.e., integrating resistant varieties, clean planting material, biocontrol methods and crop husbandry directly evaluated in farmers' fields), thus allowing the fast adoption of those measures that are found effective. The project shall build a firm foundation of information and risk assessment based on mapping of disease incidence caused by the various pathogenic forms of *Foc* and the distribution of affected/unaffected *Musa* cultivars.

The INIBAP Regional Coordinator suggested that the Indonesian project be adopted by other countries as a model for a comprehensive/holistic and integrated approach to address the *Foc* problem. Aside from Indonesia, Philippines, India, Australia, China, and Taiwan, other countries are presently focused only on initial steps on survey, collection, and characterization. A discussion was carried out to identify current *Foc* R&D activities in each country, and plans if and when resources are available.

Currently, there are two ongoing inter-country projects in the region that address the need to understand better and locate *Foc* Tropical Race 4. These are:

1. Mitigating the threat of banana

Fusarium wilt: Understanding the agro-ecological distribution of pathogenic forms and developing disease management strategies (Indonesia, and Papua New Guinea); and

photo by INIBAP



workshop on conventional banana breeding methodologies.

Other major discussions in the BAPNET meeting were on information development and exchange, and conservation and use of *Musa* germplasm.

Information development and exchange

- An innovation introduced during the 5th BAPNET SC Meeting was the use of posters to summarize and feature each country's current banana R&D activities. The innovation promoted more in-depth interaction between and among the SC members regarding banana R&D activities in each country than the previous traditional by-country reporting. A poster viewing and interaction time was allocated before the end of the meetings' first day. The SC members recommended that the practice be continued in future SC meetings.
- BAPNET SC representatives to submit, on a quarterly basis, news articles that will be featured in the Regional Information System for Banana and Plantain (RISBAP) Bulletin.
- BAPNET SC representatives were encouraged to regularly communicate to or update other network members on their respective countries' banana R&D activities and/or programs (i.e., training, workshops, conferences) using BAPNET's listserv email system. This is to maintain an open line of communication and promote the free exchange of information between and among BAPNET member-countries.

Conservation and use of *Musa* germplasm

Dr. Inge Van den Bergh of Bioversity-France discussed the Conservation Strategy for *Musa*, including the Global Crop Diversity Trust (GCDT)

and the International *Musa* Testing Programme (IMTP). Specifically, his presentation covered the prioritization of regional *Musa* collections for possible funding by the GCDT and its eligibility criteria (i.e., country as signatory to the International Treaty on Plant Genetic Resources), formation of the *Musa* Technical Advisory Group (TAG), review of IMTP Phases I-III and plans for IMTP Phase IV.

Additional agreements and workplans enunciated by the SC were:

- SC members to identify and nominate country representatives to the TAG.
- SC members agreed that BAPNET, as a network, shall support and participate in IMTP Phase IV, which is scheduled to start in early 2008.
- BAPNET SC representatives of countries involved in the present IMTP Phase 3 were requested to follow up with people involved in the trials to finalize and send in their data (for those who have not done so) by 31 March 2007.

Before the meeting ended, the SC members voted for Vietnam, through Vietnam Agricultural Science Institute (VASI), to host the BAPNET SC meeting in 2008.

References

1. Mitigating the threat of banana *Fusarium* wilt. Agustin Molina. INIBAP APO. 2006.
2. Global significance of *Fusarium* Wilt in Asia. N. Masdek, M. Mahmood, A. Molina, S.C. Hwang, A. Dimyati, R. Thangavelu and I. Omar. In: Proceedings of 2nd International Symposium on *Fusarium* Wilt on Banana. Salvador de Bahia, Brazil. 22-26 September 2003. Organized by INIBAP, EMBRAPA and PROMUSA.
3. Panama disease *Fusarium oxysporum*. Exotic threat to Western Australia. Chris Stansbury, Simon McKirdy and Greg Power. Factsheet No. 12/2000, July 2000. Edited and published by Information Services, Agriculture Western Australia, Locked Bag No. 4, Bentley Delivery Centre, WA 6983.
4. *Fusarium* Wilt of Banana. N. Y. Moore, S. Bentley, K. G. Pegg, and D. R. Jones. *Musa* Disease Fact Sheet No. 5 (June, 1995). INIBAP.

2. Survey, characterization, and development of *Foc* distribution map in Asia and contribution to the establishment of international *Foc* collections (Bangladesh, Cambodia, Malaysia, Sri Lanka, and Vietnam).

Other countries have their respective programs. The Philippines' DA RDE Agenda for Banana for 2006-2010 places top priority for measures that address *Fusarium* wilt. The Bureau of Plant Industry-Davao National Crop Research and Development Center (BPI-DNCRDC) and PCARRD, together with INIBAP, has a project, "Development of strategies for managing *Fusarium* wilt or Panama disease of banana" that includes a survey for the occurrence of *Fusarium* wilt in Region XI.

On the whole, the BAPNET meeting was not just about *Fusarium*. During the discussions, some SC members pointed out that other foliar banana diseases such as Sigatoka and bacterial wilt are also important concerns in the region. The following were, therefore, agreed upon by the SC members:

1. Development of a project proposal to characterize and determine the extent of distribution of the various pathogenic forms in the region which would contribute towards the development of a distribution map for Asia-Pacific and eventually to the formulation of appropriate foliar disease management strategies;
2. Development of a regional project proposal on bacterial wilt similar to the proposal for foliar diseases indicated above;
3. The BAPNET secretariat to consolidate the country reports for each of the identified diseases, which will serve as preliminary documents for the development of the framework of the regional project proposals on foliar diseases and bacterial wilt;
4. Conduct of a regional diagnostic training on bacterial wilt by the fourth quarter of 2007; and
5. Conduct of a training-



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