

IPR in nutraceutical & pharmaceutical products highlighted in a seminar

PHOTOS: EAGRON



Atty. Elizabeth R. Pulumbarit (left inset), legal counsel of the UP Manila, serves as the resource speaker for the 6th BAR Seminar Series held at DA-BAR.

With the view of providing knowledge on the basic and salient features of intellectual property rights (IPR) and its role for the sustainability of research and development (R&D) in the country particularly on health food with nutraceutical and pharmaceutical components, BAR organized a seminar titled, "IP management for Nutraceutical and Pharmaceutical Products". The BAR Seminar, which is the sixth of a series for this year, was held on the 28th of May 2009 at RDMIC Bldg., Visayas Ave., Diliman Quezon City.

IPR is a specific legal right on the ownership of certain creation of mind such as musical literacy, artistic work, inventions, symbols, images and designs used in commerce including copyrights, trade marks, patents & related rights. Under this law, the creator of such work has an exclusive right to control, reproduce and or

demonstrated to have physiological benefits or provide protection against chronic disease while pharmaceuticals are referred to as those with medical properties and which are intended for use in the diagnosis, cure, mitigation, treatment and prevention of diseases.

Nutraceuticals and pharmaceuticals are products or outputs of research and development (R&D) which can be threatened or abused by unauthorized imitation, reproduction, and deceptive usage of such research output facilitated by the widespread access of information as a result of advancement in technology.

The BAR Seminar aimed to provide the basic features of IPR as provided for under Republic Act No. 8293, also known as the Intellectual Property Code of the Philippines, this law is crucial in maintaining the sustainability of R&D

adapt for a certain purpose over a period of time. It also enable them to reap commercial benefits from their creative efforts and to protect them against unauthorized imitation, copying or deceptive usage of identifying marks.

The resource speaker for the seminar was Atty. Elizabeth R. Pulumbarit, legal counsel of the University of the Philippines Manila.

In the seminar, she explained nutraceuticals as dietary supplements or health foods isolated or purified from foods

in the country. It also provides corollary benefits in the pursuit of knowledge by educational institutions such as SUC, and R&D agencies like BAR.

The seminar was attended by researchers, scientists, and representatives from different state colleges and universities, private institutions, and other bureaus and attached agencies of the Department of Agriculture.

Participants were provided with practical tips, digests of IPR jurisprudence decided by the Supreme Court, and lessons learned from actual cases related to IPR in the domestic pharmaceutical industry dealing with the funding, development and commercialization of pharmaceuticals.

Atty. Pulumbarit emphasized that IPR law is actually helpful not only for safety purposes but also in saving money by not engaging in redundant research which can be capital-intensive particularly for long term research processes that require a lot of investments. The existence of prior research can be determined through the IPR office.

Types of intellectual property rights such as patents, trademarks, copyright, and designs were also discussed.

IPR is a balancing act that plays an important role in rapidly developing areas ranging from the internet to health care to nearly all aspects of science, technology, literature and the arts. It actually surrounds us in nearly everything we do at home, school, during rest time, and even during playtime, thus, the need to increase awareness, concluded Atty. Pulumbarit. (Edmon B. Agron)



BAR
BUREAU OF AGRICULTURAL RESEARCH

ISSN 1655-3942
Chronicle
Visit our official website at <http://www.bar.gov.ph>

BINHAWARDEE (2007)
Agricultural Newsletter of the Year
FLORENDO AWARD (2003)
Outstanding Information Tool for Print

Volume 10 Issue No. 5

A monthly publication of the Bureau of Agricultural Research

MAY 2009

CPAR e-PinoyFARMS® is now operational

After two years of development, piloting and deployment in the regions, the Bureau of Agricultural Research (BAR) has finally operationalized the *e-PinoyFARMS*®, a software specifically designed to systematize the process documentation of BAR's banner program, the Community-based Participatory Action Research (CPAR). The software was developed by the Optiserve Technologies Inc. headed by its chief executive officer, Ms. Cheryl Marie U. Natividad.

In a turnover ceremony, Ms. Natividad handed over the CPAR *e-PinoyFARMS*® M&E system, including the users' manual, to BAR Director Nicomedes P. Eleazar to signal the nationwide operationalization of the system. This was conducted during the culminating workshop on "Operationalization of *e-PinoyFARMS*® as M&E System of CPAR" held on 1-2 June 2009 at the Pranjeto Hills, Sampaloc in Tanay, Rizal.

The *e-PinoyFARMS*® is a custom-built farm management system which allow CPAR stakeholders to capture baseline data, farm operations, and economic transactions that support decision-making process for effective management of resources for sustainability and achieve the goal of agribusiness development.

In his message, Dir. Eleazar stressed that *e-PinoyFARMS*® system is



Optiserve Technologies Inc. CEO Cheryl Mae U. Natividad (right) hands over the *e-PinoyFARMS*® User's Manual to BAR Director Nicomedes P. Eleazar (left) to signal the national operationalization of the *e-PinoyFARMS*®. At the back are the CPAR *e-PinoyFARMS*® Regional Team.

important not only for BAR in monitoring and evaluating its CPAR projects but also for the regional partners in managing their farms and agriculture stakeholders who are interested in venturing into agribusiness development. He pointed out the need to promote the *e-PinoyFARMS*® to the regional management and stakeholders of the Department of Agriculture (DA) for a more interactive sharing and smooth transfer of relevant information.

Eleazar added that *e-PinoyFARMS*® could complement other databases of DA units and mentioned that an exploratory study is being conducted to consolidate data from these databases and agribusiness kiosks specifically for coconut farmers.

The workshop was participated in by the CPAR *e-Pinoy* Regional Teams, BAR Technical Adviser Dr. Manuel Bonifacio,

turn to page 6

In this issue

CPAR e-PinoyFarms is now operational.....	1
BAR institutes CPAR as effective.....	1
7 TechCom projects identified.....	2
Hybrid squash seeds to increase.....	3
TechCom project to conserve.....	4
Enzymes topped for banana product.....	5
BIARC develops bio-organic fertilizer.....	6
e-Pinoy FARMS operationalizes for more.....	7
Bignay, kalumpit and ubi are high.....	8
Scientists identify two anthracnose.....	9
WESVIARC inaugurates new building.....	10
Mango R&D project highlights farmer s.....	11
BAR, BIARC participate in Bicolandia s.....	12
New technologies highlighted.....	13
UPLB-CPAI evaluates impact of DFIMDP.....	14
Lowly no more: Showcasing malunggay.....	15
IPR in nutraceuticals & pharmaceutical.....	16

NTCP leads in tech transfer innovations

Since the inception of the National Technology Commercialization Program (NTCP) of the Bureau of Agricultural Research (BAR) in 2005, the program has made its distinguished mark in supporting researches whose outputs were most useful to agriculture and fishery industries and communities.

An endeavor that is closely supported by Department of Agriculture (DA) Secretary Arthur C. Yap, the NTCP has helped key players and stakeholders in the agriculture and

fishery sectors become more systematic, organized, innovative, and dynamic in their tasks and better prepared for the introduction and eventual utilization of new technologies and other significant products of R&D.

In a documentation report of BAR, it was found that among the technology commercialization (TechCom) projects that created impact in improving the lives of intended beneficiaries are: 1) Benguet State University's TechCom project on

turn to page 3



RDMIC Bldg., Visayas Ave., cor. Elliptical Rd.
Diliman, Quezon City 1104
PHILIPPINES

BAR institutes CPAR as an effective agribusiness development modality

To encourage and enhance the development of enterprises and agribusiness ventures in the farming and fishing communities, the Bureau of Agricultural Research (BAR) instituted and is implementing an innovative approach to Research, Development and Extension (RD&E) called Community-based Participatory Action Research (CPAR). This development strategy was strengthened through the leadership of Agriculture Secretary Arthur C. Yap as part of his initiatives to boost the agriculture sector through increased production and increased farmers' incomes.

CPAR is a location-specific research cum extension that deals with improved farming systems technologies for specific micro agro-climatic environment within the province and municipality. It is a downstream research method that is focused on technology verification and adaptation/demonstration in the community. It also involves extension activities on the technology needs as identified by the community in partnership with and involving the participation of the farmers.

Through the CPAR program, BAR enjoins communities to be responsive, dynamic and systematic in their management of production. BAR also encourages communities to maximize the application of information-based decision-making. This is to ensure that the product management system is organized towards the development of agribusiness enterprises and contributes to community empowerment and self reliance, motivating

them to develop productive and profitable enterprises.

CPAR projects are being implemented by the DA-Regional Field Units (RFUs) through the Regional Integrated Agricultural Research Centers (RIARCs) and the Regional Fisheries Research and Development Centers (RFRDCs) in partnership with local government Units (LGUs) and organized agriculture/fisheries group (e.g. cooperatives, farmers associations, and non-government organizations). On the funding of these interventions, policy guidelines have been set by BAR in applying for the CPAR grants.

To avail of the grant, the proposed project must cover at least two barangays and that a common technology must be identified for the area, hence the "one project-one technology" approach. Likewise, the proponent must be willing to provide counterpart funds and the LGU and NGO partners also willing to provide resource contributions (in cash or kind).

BAR is providing funds to support project activities for a maximum period of two years. The proponent together with the partner institutions have to prepare beforehand the plan and strategies to sustain and/or expand the project beyond this period.

To maximize the impact of the project, site pre-selection is recommended based on a set of criteria. This is to ensure that the necessary support systems are in place and that partner institutions will be supportive of the project. The Participatory

Rural Appraisal (PRA) is done to ensure that the project addresses the existing needs of the community and the resources of the areas are identified.

During the PRA, a community plan is formulated and the CPAR Action Plan is prepared taking into consideration the identification and selection of technology options for optimum utility, presentation and validation of technology options and other relevant information with the stakeholders, and agreement on and the packaging of CPAR projects that will include research and extension activities.

Once the project is approved, the CPAR team with the participation of the community need to organize its project management system to facilitate project implementation and coordination.

Final approval of the CPAR project proposal is based on the guidelines set in the BAR Community Research Grant (CRG) Manual, the existing needs and priorities of the area and how it is aligned with the thrusts and goals of DA.

To date, over 7,000 farmer-beneficiaries all over the country have benefited from the CPAR program with 89 CPAR continuing projects being implemented in 16 regions in 299 sites/barangays. For 2009, BAR has approved 102 new and continuing CPAR projects. *(Rita T. dela Cruz with reports from RCD)*



RITA T. DELA CRUZ
managing editor/layout

MANUEL F. BONIFACIO, PhD
VICTORIANO B. GUIAM
consulting editors

EDMON B. AGRON
MARLOWE U. AQUINO, PhD
RITA T. DELA CRUZ
CHRISTMAS B. DE GUZMAN
DONDON CARLOS P. LEJANO
FERDINAND DAX L. LORENA
ELLAINE GRACE L. NAGPALA
RAFAEL S. UMBRERO
writers/contributors

RICARDO G. BERNARDO
ANTHONY A. CONSTANTINO
reproduction/printing

JULIA A. LAPITAN
VICTORIA G. RAMOS
circulation

MARLOWE U. AQUINO, PhD
head, ACD

DR. NICOMEDES P. ELEAZAR, CESO IV
adviser

For subscription and inquiries please contact:

Applied Communication Division Bureau of Agricultural Research, Department of Agriculture
3/F RDMIC Bldg., Visayas Ave., cor. Elliptical Rd., Diliman, Quezon City 1104 PHILIPPINES
Telephone No. +63 (02) 928-8505 local 3026-3027 Fax: (02) 927-5691 or (02) 927-0227
e-mail: acd@bar.gov.ph

Articles are also available online. Please visit us at: <http://www.bar.gov.ph>



Chef Jonnathan Paul Em
of Paul Calvin's Deli



PHOTOS: CDEGUZMAN & DLEJANO

LOWLY NO MORE: Showcasing malunggay-inspired dishes in Manila's high-end resto

BY DONDON CARLO P. LEJANO

Who would have thought that located in a posh corner in Taguig City is a restaurant which serves malunggay-inspired dishes?

When we hear malunggay, what usually comes into mind is the bunch of green leaves used as an ingredient in traditional Filipino dish like tinola, ginataan, and monggo.

Paul Calvin's Deli, located at the Bonifacio Global City in The Fort, is a two-year-old family restaurant which has *malunggay bread* and *green rice* with malunggay as part of their menu.

Yes, one can find these malunggay-inspired food products in this high-end spot in the urban zone.

These malunggay-inspired food products are not initially part of the restaurant's original menu. By inventing new dishes to cater to the demands of the more health-conscious customers, Chef Jonnathan Paul Em, came up with the idea of putting malunggay as an ingredient to their dishes.

"Malunggay is both good thing and bad thing, culinary-wise. Bad because it does not really have a distinct taste that could add up to the flavor of the food. Good, because it is very nutritious. So you get nutritional benefits from malunggay without really noticing it," said Chef Jonnathan.

He also added that his family is really into supporting the various campaigns for agriculture. In fact, they grow the malunggay that they use beside their home in Taytay, Rizal, not to mention the other greens, herbs and rootcrops that are also being utilized

in their commissary.

Malunggay is easy to grow and is available all year round. It is famous in the tropics. What is consumed from this tree are the leaves and the fruits. In the case of Paul Calvin's Deli, though, they use only the leaves as an ingredient in their breads and some dishes.

"We include only the freshest malunggay leaves in our breads to guarantee freshness and to ensure quality. We pick the leaves everyday so the consumers can be confident that the products they buy are indeed of best quality," claimed Chef Jonnathan.

Secretary. Arthur Yap of the Department of Agriculture (DA) once visited this restaurant and highly commended the owners for supporting the government's campaign to go green. As a matter of fact, the Secretary even graced the ribbon-cutting ceremony of the restaurant's commissary in Taytay.

The Paul Calvin's Deli commissary in Taytay is where healthy breads are being baked fresh everyday. And aside from the malunggay bread or malunggay loaf, they also offer malunggay muffin, malunggay cake, malunggay pandesal and other healthful stuff like calabaza cake, banana cake, malunggay potato loaf, brazo de calabaza, and the whole wheat complete, which is composed of malunggay, cashew, walnuts, and raisins.

With every single serving of the different variations of malunggay bread, consumers are assured of getting seven times the vitamin C from orange, four times the

calcium found in milk, three times the vitamin A found in carrots, three times the potassium of banana, and twice the protein in milk.

Meanwhile, another blockbuster malunggay-inspired creation of Chef Jonathan is the green rice. For obvious reasons, it is called green rice because of malunggay and other greens like leak and onions. Not too dull as compared with plain rice; and not too oily like the garlic fried or yang chow rice is this rice concoction.

Moreover, malunggay is proven very good for breastfeeding mothers because of its calcium content. Aside from this, it is rich in other minerals like iron, phosphorus, beta carotene, thiamin, niacin, and riboflavin.

"This is surely one bunch of a healthy treat for the whole family to enjoy," said Chef Jonnathan of malunggay. "Actually, the reception from our regular patrons is very positive that's why we continuously try to discover new dishes which are not only healthy, but also affordable."

Chef Jonnathan adds that they are hoping that through word of mouth, their malunggay bread and other good-for-your-health foodstuff would gain more popularity.

Paul Calvin's Deli, the first in producing malunggay bread, prides itself for having the passion for great food. "We make sure that our customers do not only find our food good and tasty, we also make it a point that every time they dine with us their health benefit is assured. Hence, the incorporation of healthy food products like the malunggay in our menu."

UPLB-CPAf evaluates impact of DFIMDP supported projects



The owner of Tatoy's Manukan and Seafoods, Mr. Honorato "Tatoy" Espinosa (right) is among the biggest buyers of native chicken in Iloilo. He is being interviewed by the team of evaluators from CPAf.

PHOTOS: EMGPALA

UPLB Chancellor Luis Rey P. Velasco (left) responds to the queries from the panel of evaluators on his project. With him are his co-researchers for the study, Dr. Celia Medina and Dr. Merlin Mendiore.



A series of interviews and site visits was conducted by the College of Public Affairs (CPAf) of the University of the Philippines Los Baños (UPLB) from May 5 to 28, 2009 for the impact evaluation of projects supported by the Bureau of Agricultural Research through the Diversified Farm Income and Market Development Project (DFIMDP). Led by Dr. Agnes C. Rola and Ms. Agnes R. Chupungco, of the CPAf, 48 selected projects were evaluated by the evaluation team.

World Bank supported

DFIMDP is a World Bank supported project designed to stimulate rural growth and farmer incomes by enhancing the competitiveness of Philippine agriculture and fisheries and through market-oriented private sector-led investments.

One of the covenants agreed under the DFIMDP is the Competitive Research Grants (CRG) which aims to promote market-oriented research to help

improve the competitiveness of Philippine crops, livestock and poultry, and fisheries. Since 2005, R&D projects were supported under DFIMDP with BAR on the lead.

CRG funds and supports high quality and collaborative projects designed to provide solutions to specific problems on the competitiveness of the agriculture and fisheries sector. Through the CRG, funds are channeled to research activities of the DA units as well as of other institutions outside DA to enable the farmer clients of DA to develop products and marketing strategies in response to market trends.

While there have been significant results from the DFIMDP supported projects, an assessment of the contribution and impacts of R&D towards enhancing market potential of agriculture and fishery products is yet to be done. In this regard, BAR has commissioned CPAf to evaluate how research outputs of projects under the DFIMDP have contributed to the

objectives of DFIMDP. Specifically, the impact evaluation was conducted to: 1.) analyze the degree of market orientation of the program; 2.) identify issues concerning the implementation of the program; 3.) validate the market orientation and competitiveness of projects at various stages of technology development; and 4.) recommend measures to improve implementation and enhance the impact of future agricultural projects.

Two-level analysis

The selected projects were evaluated at the macro and micro level perspectives. Macro level analysis entails a classification of the R&D projects by level of technology development, status of implementation, profile of the researchers, allocation of funds by commodity and by region, market orientation of the projects, and implementation issues. Meanwhile, quantitative and qualitative analyses were employed in the micro level analysis, as detailed in the guidelines of the ACIAR Impact Assessment by Gordon and Davis (2007).

From the 42 selected projects, 37 were evaluated at the macro level where the project proponents were interviewed. Meanwhile, project sites of the other 8 projects were visited for the micro-level analysis. Aside from the interview with the proponents of the projects, a survey of key informants (local government officials, farmer leaders, traders) and focus group discussions with the beneficiaries of the project were also conducted.

The result of the impact evaluation is expected to be released before the closing date of DFIMDP Project on 30 June 2009. (Ellaine Grace L. Nagpala)

7 TechCom projects identified for their high impact and upscaling potentials

Seven technology commercialization (Tech Com) projects supported by the Department of Agriculture (DA), through the National Agricultural and Fisheries Council (NAFC) and the Bureau of Agricultural Research (BAR), were identified to have potentials for up-scaling due to their high impacts and benefits to intended beneficiaries.

This was the report of a Study Team commissioned to conduct Project Benefit Monitoring and Evaluation (PBME). The PBME is a management tool that generates information on the benefits and impacts of projects to various stakeholders, problems/constraints encountered and lessons learned. These could then serve as sound bases for implementers to ensure effective implementation and replication of project interventions in other areas to benefit a wider mass base of beneficiaries.

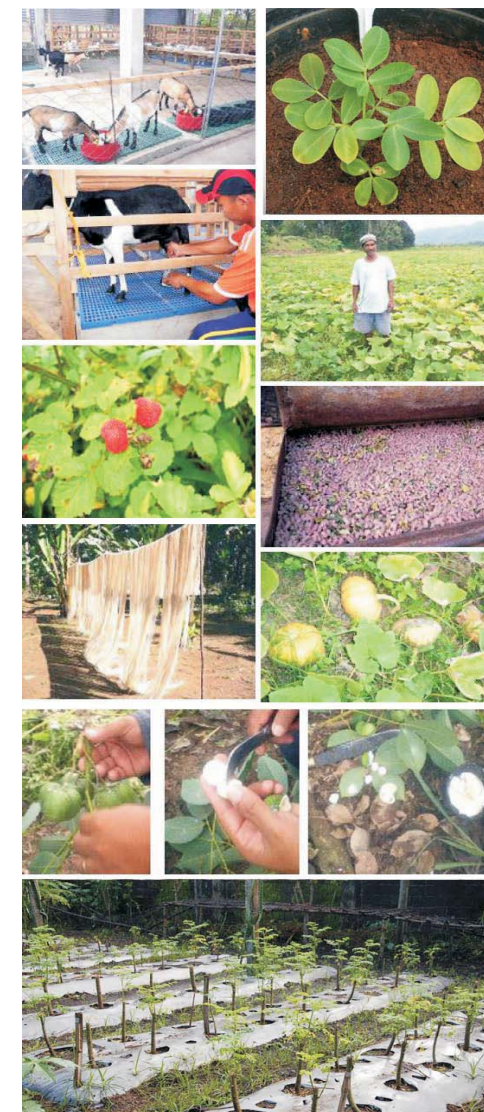
These projects are: 1) Technology Piloting of Probiotic and Saanen-Anglo Crossbreed for Goat Milk Production in Bayambang, Pangasinan; 2) Commercializing and Integrating Hybrid Squash Seed Production Technology into the Cropping System, in Santo Nino, Cagayan; 3) *Sapinit* (wild raspberry) production and Utilization Project in Dolores, Quezon; 4) Commercialization of *Malunggay* Leaf Meal as Feed Supplement for Dairy Cattle in the Philippines in Tiaong, Quezon; 5) Enhancing the Productivity of Abaca

Farms in the Bicol Region through the Integrated Farming System: Abakayamanan Program in DA-FIDA Region V; 6) Technology Promotion of Promising Varieties of Peanut under Coco-Based Areas in Sorsogon City; and 7) Rapid Propagation of Rubber Tree via Somatic Embryogenesis in North Cotabato.

According to the Study Team that conducted the PBME, the seven projects high marks due to their benefits and impacts particularly in increasing incomes of underprivileged farmers, contributing to food security, alleviating rural poverty, and overall growth of the agriculture sector.

The seven are among 13 high-potential projects evaluated by the Study Team. These projects were funded through the DA's "Technology Management for Competitive Agriculture and Fisheries Sector" which is being managed and monitored by NAFC and BAR in cooperation with DA-Regional Field Units (RFUs) and local government units (LGUs).

This facility is financially assisted by the Government of Japan (GOJ) under its 2KR-Grant Assistance for Underprivileged Farmers. The grant from GOJ is intended to support a range of diverse projects that aim to demonstrate the adoption of appropriate technology for commercialization. (Rita T. dela Cruz)



PHOTOS: MRMC

NTCP... from page 1

Strawberry and Community-based Potato Production Management; 2) Philippine Carabao Center's Biotechnology R&D on *In-vitro* Fertilization of Buffalos and Commercialization of Dairy-based products, 3) Philippine Coconut Authority's Coco Sugar, and 4) Tripartite Farm Mechanization Projects of the Philippine Rice Research Institute, Bureau of Postharvest Research and Extension, and Fiber Industry Development Authority on improving locally developed machines and their use by rice farmers, fiber traders, and post-harvest handling facilities.

Projects funded under NTCP cut across agricultural crops, fisheries, and livestock sectors. These were carefully chosen in an effort to maximize the outputs of research scientists and researchers by bringing total packages of technologies to farming and rural communities.

To date, BAR has funded 82 NTCP projects supporting more than 20 agencies and organizations involved in TechCom related activities. More people and communities are served with timely and appropriate technologies to increase their production and profit.

Given the need for more TechCom initiatives, BAR has developed a new commercialization proposal which

was approved for funding and implementation. With this financial support to develop and uplift the conditions of people and local communities, BAR focuses its initiatives to intensify and systematize technologies for commercialization. Projects must focus on technologies that are globally competitive and promotes sustainable agriculture.

NTCP projects are supported through a grant funds received from the Government of Japan (GOJ) for projects under the 2KR-Grant Assistance for Underprivileged Farmers (GAUF). The grant which is managed by the National

turn to page 5

Hybrid squash seeds to increase Cagayan farmers' production and profits

Squash or *kalabasa*, also botanically known as *Cucurbita maxima* Duchesne ex Lamk., is commonly cultivated in the country throughout the year. This indigenous vegetable is recognized as an important source of vitamins and minerals.

Considering the importance of good quality seeds in attaining farm productivity and profitability, a technology commercialization project titled *Commercializing and Integrating Hybrid Squash Seed Production Technology into the Cropping Systems of Sto. Niño, Cagayan* is being supported by DA through the National Agricultural and Fisheries Council (NAFC) and BAR. This project is one of the 13 high-potential projects given grant funds under the 2KR-Grant Assistance for Underprivileged Farmers (GAUF) which is supported by a grant fund from the Government of Japan (GOJ). The Farmers Community Development Foundation International (FCDF), a non-stock, non-profit, tax-exempt foundation in Los Baños, Laguna, is the project proponent. FCDF is dedicated to promoting the development of farmers' communities in socioeconomically depressed areas.

The project aims to increase the income and improve the quality of life of small farmers in Sto. Niño, Cagayan. Specifically, it intends to establish a community-based organization of farmers in the locality to institutionalize technology transfer and commercialization of hybrid squash seed production. Integrating hybrid squash seed production into the regular cropping systems of farmers will be targeted to optimize farm productivity and income.

The municipality of Sto. Niño is one of the poorest and nutritionally-deficient towns of Region 2. The traditional cropping systems in the area are generally rainfed rice-based for the lowlands and corn-based for the uplands and flood plain areas along the Chico River. Monocrop of corn is planted in the flood plain areas in May-August and December-March while the rainfed lowland areas are planted to rice in July-October rendering the areas vacant for the rest of the year. In both cropping systems, net farm income is around PhP 5,000.00 per hectare which is very low to provide



PHOTOS: FCDF

for even a modest way of life for a farming family.

Seed production is a delicate undertaking and requires adequate technical know-how in addition to the need for adequate capital to venture in this undertaking. Among the problems identified in the municipality are: lack of farmers' knowledge on the appropriate technology to produce optimum squash seed yields (150-200 kg seeds per hectare); lack of farmers' knowledge on seed post-harvest and processing technology to produce/maintain quality seeds; limited resource/capital to support input costs; absence of a community-based organization to channel community group action and assistance to community members; and lack of a mechanism to harness the support of local and provincial government units. To address these concerns, FCDF collaborated with the East-West Seed Company (EWSC), a Philippine-based producer of vegetable seeds for domestic and foreign markets, and assessed the suitability of Sto. Niño for hybrid seed production of squash.

The project started with 10 farmer-cooperators who were provided with breeder seeds of selected parents for planting simultaneously with training on the technology for subsequent crossing to produce the hybrid squash seeds. Providing loans in kind plus additional labor support for pollination work is one of the components of the project to ensure that the necessary production inputs such

as fertilizers and pesticides are applied.

Due to the favorable weather condition and suitability of the soil, the results confirmed the economic advantage of squash hybrid seed production, compared to the predominant corn-crop raised in the area, generating a net income of PhP 50,000.00 to PhP 70,000.00 per hectare in a period of four months. Farmer-cooperators successfully harvested 150-200 kg per hectare of hybrid squash seeds.

The good thing about the hybrid varieties of squash is that even small-scale farmers can obtain big income from their small farms. Farmers are getting interested in planting hybrid seeds not only because squash yields are high and fetch a good price, but also because they can market the produced hybrid seeds. According to Ms. Angelina Batugal, director of research of FCDF, the project is progressing very well, stressing that the establishment of a community-based organization for squash farmers is presently being initiated. Ms. Batugal also said that a 1.75 hectare demonstration farm was already put up at Brgy. Centro Norte, one of the eight project sites, wherein male and female parent seeds provided by EWSC were planted on November 2008. Hand pollination was done to ensure optimum hybrid seed production. Presently, the pollinated plants have started to bear fruits. (Christmas B. de Guzman)

New technologies highlighted 4th Nat'l Goat & Sheep Congress

With the theme "*Angkop na Teknolohiya sa Kambing at Tupa Panalo Ka*," the Federation of Goat and Sheep Producers Association of the Philippines, Inc. (FGASPAPI) held the 4th National Goat and Sheep Congress at the Cagayan Colleges Tuguegarao (CCT) in Tuguegarao City, Cagayan on 6-8 May 2009. The Bureau of Agricultural Research (BAR), one of the sponsors, participated in the activity with an exhibit showcasing recent technologies developed out of the projects that it has supported.

The congress aimed to update goat and sheep raisers on new technologies, showcase superior genetic resources available in the market, and link farmers, animal breeders, and other major players in the industry.

Dr. Carlos Mendoza, director of the Livestock Development Council (LDC) was the guest speaker in the program. In his speech, he said that raising goat and sheep is a very good business and an easy venture. However, he said that, to attain higher production, new technologies for proper care and maintenance of the animals must be adopted, hence, activities like the National Goat and Sheep Congress is very important as valuable knowledge is shared among raisers.

Mendoza likewise emphasized that the Philippines has only 4.2 million goats based on the initial 2009 inventory and yet, it is slaughtering and consuming 2.6 million goats every year. The need to double our production rate is necessary, Mendoza urged.



Superior breeds of goat and sheep parade during the celebration.

PHOTOS: EAGRON

He enjoined the private sector to raise more goats and sheep to support the demand of the market. He further stated that, to attain good meat quality, which is among the goals of the industry, breeding strategies and techniques need to be continually improved.

Highlighting the congress were the contests for Best Goat and Sheep, Best-dressed Goat and Sheep, and Best Kiddie Rodeo. Other highlights included an animal exhibit, and forage and veterinary exhibits attended by farmers and other enthusiasts showcasing goat and sheep breeds. Among the breeds displayed were the Nubians, Toggenburgs, Saanens, French Alphones, and La Mancha—primary goat breeds - as well as the Boer goats – a breed from South

Africa, developed mainly for meat production.

A series of lectures and seminars were also conducted discussing the latest trends, status and prospects of small ruminant production in the Philippines; government support policies and programs; genetic selection and record management; and the profitability of goat and sheep raising. One of the resource speakers at the congress was Dr. Jovita M. Datuin, manager of the Ilocos Integrated Agricultural Research Center (ILIARC). She discussed the goat enhancement program funded under the Community-Based Participatory Action Research (CPAR) project funded by BAR in Region 1. (Edmon B. Agron)

e-Pinoy... from page 7

(WESMIARC), and initial operation as test runs for the system's effectiveness and efficiency were instituted.

With the system in place and fully operational, it has expanded its scope to include all the regional research centers throughout the country, highlighting the different priority commodities including agro-climatic conditions of the identified project sites. Each region has its own regional system located at the RIARC and which is connected to a central hub at BAR through proper system operation and

data management.

Given the unique characteristics of the CPAR communities, different data sets were prepared along with data management for proper information to be generated to support the whole operation of community-based projects. The use of the same data management framework will unify all data across locations of varying agro-climatic condition. The unified system is designed to streamline redundant procedures in data management and serve as the repository of mission-critical information to support planning, decision-making, and policy formulation for

agriculture and fisheries development.

Specifically, the operationalization of e-Pinoy FARMS® M&E aims to: 1) enable stakeholders to effectively monitor activities related to value-chain management, value adding and enhance agri-enterprise development and more diverse income opportunities for the households; 2) provide a mechanism for process documentation of community-based initiatives; 3) strengthen linkages and networking with local government units, research institutions, and the

turn to page 5

BAR, BIARC participate in Bicolandia's biggest trade show



BAR sponsors and participates in the 5th Bicol Business Week, dubbed as "Bicolandia's Biggest Trade Show". Through BIARC, the bureau's booth showcased recent technologies supported under the NTCP. Free publications and technology briefing materials were also handed out to booth visitors.

PHOTOS: RDELACRUZ

Dubbed as "Bicolandia's Biggest Trade Show" the Bureau of Agricultural Research and its regional partner, the Bicol Integrated Agricultural Research Center (BIARC) participated in the 5th Bicol Business Week on 10-17 May 2009 at the Avenue Plaza Grounds in Naga City. BAR was also one of the sponsors of the activity.

The event is an annual regional trade fair organized by the Metro Naga Chamber of Commerce and Industry showcasing what the Bicol region has to offer in terms of agribusiness and tourism. Carrying the this year's theme, "Make it Bicol", the activity featured an agri-aqua fair, consumer goods expo, real estate construction materials show, and new technologies showcase, which were distinct to the Bicol region. The event was also highlighted with jobs fair, conferences, and fora for interested entrepreneurs.

BAR participated in the agri exhibit in partnership with BIARC showcasing recent technologies supported by the National Technology

Commercialization Program (NTCP) such as malunggay (*Moringa oleifera*), sweet sorghum, pineapple, and pili which is one of the banner products of the Bicol region under the One Town-One Product (OTOP). OTOP is a priority program of the government to promote entrepreneurship and create jobs by promoting a specific product or service with competitive advantage in each city and municipality of the country.

According to Dr. Elena B. delos Santos, manager of BIARC, a lot of products have already been developed out of these NTCP-funded projects and many interested individuals and agencies from the private sector are already adopting these technologies. These include moringa noodles, moringa juice, moringa coffee, moringa tea, and moringa powder. BIARC, through its lead food technologist, Ms. Arlene I. de Asis, have developed sweet products from malunggay such as moringa surprise, polvoron and cookies. Their latest products are moringa capsules and the newly-packaged moringa tea which now comes in two forms, loose and in tea

bags.

Other products showcased were dehydrated Queen pineapple, piña cloth and ready to wear gowns and barong made from processed pineapple leaves, pili pulp oil and pili pulp powder, sweet sorghum flour and sweet sorghum pop, and bio-organic fertilizer from sweet sorghum. BAR publications featuring recent technologies from supported researches were also given to booth visitors.

Joining the 5th Bicol Business Week is an opportunity for both BAR and BIARC to showcase various products developed in Region 5 and a chance for interested agri entrepreneurs to take advantage of the technologies that are now available in the market.

Helios B. Pastoral, chairman of the activity, last year's Bicol Business Week netted 10,000 visitors from all walks of life generating P20 million worth of business transactions in its eight day run. This proves how this event, now on its 5th year, is fast becoming a Bicol institution. It was initiated in 2005. (Rita T. dela Cruz)

TechCom project to conserve RP's wild raspberry in progress



Sapinit (*Rubus rosaefolius* L.)



PHOTOS: wikipedia.org

A technology commercialization project on the production and utilization of an endemic plant species in the country called wild raspberry or "Sapinit" is being supported by the Bureau of Agricultural Research (DA) and National Agricultural and Fishery Council (NAFC). The project involves the conservation and development of the economic potential of *Sapinit* found in Mt. Banahaw, Quezon Province. It aims to develop a package of technology to enhance *Sapinit* production and utilization that would help broaden household income-earning opportunities for the communities in the target areas.

Scientifically known as *Rubus rosaefolius* L., *Sapinit* is a spiny, branchy shrub that grows up to a height of 1.3 meters and a diameter of 3 centimeters. Its leaves are pinnate or featherlike consisting of three to seven leaflets. It has white-colored flowers and bears fruits that are berry-type matching the shape of the

cultivated strawberry. However, it only measures up to 3 centimeters in length and 1.8 centimeters in diameter at the fruit base. It is orange-red color when ripe and has sweet sour taste. This kind of wild raspberry is widely distributed in open secondary forests from Luzon to Mindanao at low to medium altitudes, specially where the soil of fertile and there is abundant soil moisture.

Similar to strawberry and *Bignay*, *Sapinit* can be processed into jam, wine, vinegar and many other food products which could generate additional income for rural households. The project aims to develop a package of technology to enhance the production and utilization of the wild raspberry.

The Quezon Agricultural Experiment Station, DA-Region IV as the proponent, has renovated the processing area at the Research Outreach Station and is already processing *Sapinit* into jam and

wine. The demonstration farm in Sitio Bangkong Kahoy, Kinabuhayan in Dolores, Quezon has been identified. In a related development, proprietors of a resort in the area presently raise *Sapinit* within their vicinity and are already processing this into vinaigrette for salad dressing.

The project targets the members of the Rural Improvement Club of Kabuhayan as beneficiaries of the project. The 22 members have been briefed on the project and are already looking forward to be trained on *Sapinit* production and processing.

"*Sapinit* Production and Utilization Project" is one of the 13 high-potential projects which are being supported under the 2KR-Grant Assistance for Underprivileged Farmers (GAUF) through a grant fund from the Government of Japan (GOJ). (Christmas B. de Guzman)

NTCP... from page 3

Fishery and Agriculture Council (NAFC) was awarded to BAR through the project, "Technology Management for Competitive Agriculture and Fisheries Sector".

BAR's continuous support to TechCom projects aims to make use of technologies that will raise the competitiveness of local enterprises in global market. BAR's partnership with other agencies in R&D, will make the agriculture and fishery sector more responsive and dynamic to the changing economic situation in the world today. (Marlowe U. Aquino, PhD)

e-Pinoy... from page 13

private sector through participation and complementation; and 4) give access to information technologies for informed decision-making, including possible market linkages, to farmer/fisherfolk associations and cooperatives.

BAR is currently working with other DA units particularly the Information Technology Center for Agriculture and Fisheries (ITCAF) for a more interactive sharing and smooth transfer of relevant information to key players and users of community-based information. (Marlowe U. Aquino, PhD and Rita T. dela Cruz)



Enzymes topped for banana product development

Being an industry that employs more than 40,000 people, the banana industry is among the Philippines's leading earners in the fruit business and contributes notably to the country's export revenues.

There is a downside to the export of bananas. With the banana industry's gear for the export market, it is being plagued in terms of "rejects." Reject is the term being used to refer to bananas that do not satisfy the quality standard for export due to size differences or peel discoloration.

These rejects are still suitable for processing, though. Unfortunately, international trade in processed bananas has not developed significantly. Hence the banana industry produces a lot of wastage which can be avoided only if given ample attention.

The National Institute of Molecular Biology and Biotechnology (BIOTECH) of the University of the Philippines Los Baños (UPLB) has developed a technology for large scale production of pectinase that is ready for commercialization. Pectinases are enzymes that disintegrate pectic substances in plant tissues into smaller molecules. The enzymatic process using pectinases can facilitate the production of alternative high value products from banana, significantly reducing production time and costs.

The Bureau of Agricultural Research (BAR) supported a BIOTECH project which primarily aims to utilize the pectinase produce for the development of quality products from



PHOTO: RDELACRUZ

banana. Also among the project's objectives is making use of banana by-products, particularly the peel, to produce high-value foodstuffs.

The said project, "Utilization of Pectic Enzymes for Banana Product Development and By-Product Utilization," was conducted from 2001-2004 by BIOTECH in collaboration with the Institute of Food Science and Technology (IFST), also of UPLB.

In the course of the project, researchers produced pectic enzymes for banana product development and by-product utilization using BIOTECH-optimized conditions on a large scale. They also studied the different methods of pectic enzyme immobilization. These

activities culminated in the development of the enzymatic processes for the production of banana juice and banana wine.

With the success of this project, high-value products from banana by-products can now be made available for consumption easily. Aside from banana puree, ready-to-drink juice, and banana wine, banana oil and other banana extracts/essences can now be produced more efficiently because of this undertaking.

With proper utilization of banana rejects, wastage from banana production in the country can be greatly reduced, if not totally eradicated. (Dondon Carlo P. Lejano)

CPAR e-Pinoy Farms... from page 1

BAR Regional Coordinators and Technical Staff from Program Development Division, Planning Unit, Finance, Applied Communication Division, Information Management Unit of BAR, and Optiserve. The activity hoped to further address issues and concerns on the operationalization of the CPAR e-PinoyFARMS® system, as well as technical and financial issues that the regions encountered in populating the database and uploading to the BAR central server.

An audio-visual presentation of CPAR success stories featured in NBN's *Mag-Agri Tayo* was also documented in the e-PinoyFARMS® as presented by Ms. Julia Lapitan, assistant head of ACD. This is to inspire the CPAR Regional Team to complete the documentation of their CPAR projects through the use of the system and for their projects to be included in the roster of success stories that has been so far documented and shown on national television.

To date, 96% of the total new CPAR projects funded, 26% of total CPAR sites, 51% of total farmer's profiles nationwide were already uploaded in the system.

The e-PinoyFARMS® is under the project titled, "Establishment of the e-PinoyFARMS® for a Sustainable and Profitable Agriculture and Fisheries Community-based Initiatives in all Regions" which is funded and supported by BAR. (Rafael S. Umbrero)

Mango R&D project highlights Farmer's Field Day in Iloilo

PHOTO: ENAGPALA

Mango farmers from Leon, Iloilo gathered for a field day on mango research projects at Brgy. Talacu-an, Leon, Iloilo on 14 May 2009. Around 70 participants attended the affair. The field day was centered particularly on the mango research projects in Western Visayas supported by the Bureau of Agricultural Research and implemented by the Department of Agriculture and the Western Visayas Integrated Agricultural Research Center (DA-WESVIARC). Being among the mango-producing municipalities of Iloilo, Leon was selected as one of the field locations of the project "IPM strategies in Mango Growing Areas of Western Visayas".

The IPM program or Integrated Pest Management is an integration of pest management interventions such as cultural practices, pesticide management and mechanical control. With the cooperation of the Local Government Unit of Leon, it is expected that the mango farmers of Leon will produce higher yields of good quality fruits through the application of IPM.

The activity commenced with a field tour of the mango plantation of Mr. Romulo Cabana, Mayor of Leon Iloilo and a farmer cooperator of DA-WESVIARC in the mango IPM project. The IPM practices employed in the farm of Mr.



Ms. Ma Anne S. Oren, proponent of the IPM project on mango, discusses the findings of the project to the farmers.

Cabana, are also used in the farms of other mango farmers, include bagging of mango fruits, pruning, sanitation, irrigation, fertilization and spraying of pesticides. During the farm visit, it was observed that mango fruits from trees applied with the said IPM practices were of superior quality as compared to those from trees without

IPM practice. The fruits were free from fruit fly damage and blemishes.

According to Mr. Cabana, aside from superior fruit quality, a significant increase in yield in mango was also noted upon application of IPM. Mr. Cabana revealed that yield losses were incurred when the IPM program was not yet practiced, particularly bagging, could reach as high as 90 per cent. However, upon practice of IPM, yield loss decreased to 10 per cent, and an average of 2-3 tons of fruits can be harvested from a single tree.

After the field visit, a program started with a welcome remarks delivered by Mr. Edwin Capilastique, Chairman of the Committee on Agriculture of Leon. Messages were also delivered by Mayor Cabana, Office of the Provincial Agriculturist Crops Division Chief Reynaldo Osano, and DA-WESVIARC Manager Peter S. Sobrevega. An open forum followed after the programs to answer the queries of the other mango farmers on their mango crops.

Also present in the activity are Ms. Ma Catalina Capilastique, Municipal Agriculturist of Leon and Ms. Ma. Anne S. Oren and Ms. Merlin A. Adolacion, proponents of the mango IPM project from DA-WESVIARC. (Ellaine Grace L. Nagpala)



(Right photo) Mayor Cabana and Mr. Celiz pose after evaluating the mango trees.



PHOTOS: ENAGPALA

WESVIARC inaugurates new building during its 50th anniversary

PHOTOS: FLORENA



WESVIARC Manager Peter S. Sobrevega welcomes the participants.

Mr. Jose Ira Archimedes D. Borromeo (right) represents BAR during the ribbon cutting ceremony during the WESVIARC's opening celebration.

The Western Visayas Integrated Agricultural Research Center (WESVIARC) based in Jaro, Iloilo celebrated its 50th anniversary on 2009 April 28-May 7 with the theme "Golden Memories and Experiences: Intensifying Our Quest for R&D Excellence".

The weeklong event kicked off with the opening of the 2009 Farmers and Fisherfolk Month and the launching of the Adopt a Barangay Program on April 28. However, the main celebration started on May 5 with a motorcade and the opening of the field-day and exhibits at the station.

In a message given by BAR Director Nicomedes P. Eleazar, to the participants of the WESVIARC celebration, he commended the hard work and service of all the personnel of the station who continue to excel in research and development (R&D) to help the farmers

and fisherfolk in Western Visayas. He likewise recognized WESVIARC for its passion in the pursuit of excellence in R&D despite the problems it has endured during the past years, particularly, the recent devastation of its Center by typhoon "Frank".

Part of the celebration activities is the blessing of the newly rehabilitated WESVIARC administration and R&D building. The building houses the office of the manager, laboratories and other research facilities, and administration unit.

The rehabilitation of the building was made possible through funding support from BAR's Institutional Development Grant (IDG). Furthermore, the Bureau funded the acquisition of ICT hardware and office equipment such as photocopying machines, tables, chairs

among others, to support the operation of the new building.

The new building was inaugurated on May 7, which coincided with the establishment of the Visayas Rice Experiment Station (VRES) on 7 May 1959 through RA 2028. It was however renamed as the Visayas Experiment Station (VES) in 1981 expanding its function to include crops and livestock. On 25 February 1991, however, through Administrative Order No. 6, the station was designated as DA's research station and facilities thus converting VES into what is now known as WESVIARC. The center covers a land area of 62.53 hectares and manages eight research stations and laboratories in the Island of Panay. (Ferdinand Dax L. Lorena)



Blessing of the new WESVIARC's Multipurpose Hall.

The newly reconstructed WESVIARC building

PHOTOS: FLORENA

BIARC develops bio-organic fertilizer from sweet sorghum residues

PHOTO: RDELARUZ



Bignay, kalumpit, and ubi are high in antioxidant - study

Thus was the verdict on *bignay*, *kalumpit* and *ubi* as high in this factor. This is indicated by a study titled, "Antioxidant Potential and Components of Philippine Vegetables and Fruits" which was funded by the Bureau of Agricultural Research (BAR) after scrutinizing 15 fruits and vegetables which were initially supposed to be high in anti-oxidant activity.

The 15 fruits and vegetables which were the subjects of the study were: malunggay (*Moringa oleifera*), bignay (*Antidesma bunios* (L) K. Spreng), squash (*Cucurbita maxima*), eggplant (*Solanum melongena*), patola (*Luffa spp.*), tiesa (*Lucuma nervosa*), mangosteen (*Garcinia mangostana*), durian (*Durio zibethinus* Murr.), kalumpit (*Terminalia microcarpa* Decne), alugbati (*Basella alba* L.), ampalaya (*Momordica charantia*), bago (*Gnenum gnemon*), sayote (*Sechium edule*), saluyot (*Corchorus olitorius*), sitao (*Vigna sesquipedalis*), and ubi (*Dioscorea bulbifera*).

This project was implemented under the leadership of Prof. Virgilio V. Garcia of the Institute of Food Science and Technology of the University of the Philippines Los Baños (UPLB) in collaboration with the Food and Nutrition Research Institute (FNRI) under the Department of Science and Technology (DOST).

Garcia and his research team noted that, in the recent years, research has been very active on the natural antioxidants derived from plants, animals, and microorganisms.

Previous studies have shown that antioxidants play a very significant role in the prevention of oxidative damage in the body which can lead to cardiovascular diseases, diminished immune functions, and generation of certain cancers if not



Kalumpit



Bignay



Ubi

Garcia and his research team noted that, in the recent years, research has been very active on the natural antioxidants derived from plants, animals, and microorganisms.

addressed.

In addition, it has been recognized that it is necessary to consume diet forms of antioxidants even if all biological systems have their own defense mechanisms in the form of endogenous enzymatic antioxidants.

Various steps in the research process were followed to find out which among these fruits and vegetables have the highest potentials for producing antioxidants. These steps are the preparation of crude extracts of antioxidants, screening of antioxidants, and partial separation of antioxidant components.

Meanwhile, another interesting

finding from this analysis is that high antioxidant activities are also present in the non-edible portion of some fruits, especially the inner and outer pericarp of mangosteen and the seed of tiesa. Results also showed that most green and leafy vegetables exhibited eminent antioxidant properties.

With this study, relevant data on the antioxidant activities of indigenous fruits and vegetables have been generated. This would serve as a benchmark for other research institutes, universities, and non-governmental institutions who wish to do further work on this subject matter. (Dondon Carlo P. Lejano)

morphological and cultural characteristics of *Colletotrichum* species and the lack of standardization of cultural conditions among different researchers around the world, morphology and conidial characteristics were insufficient to determine the true identity and to separate the two species. Thus, a more intensive study is recommended to look into the diversity of *C. gloeosporioides* and *G. moniliformis* in onions.

Dr Alberto said that the results of

this study are useful to scientists, extension workers and the pesticide industry in addressing the disease. He further emphasized that thorough knowledge of the pathogens biology, identity, and method of infecting their host is the best weapon in coming up with effective solutions and suitable management strategies to neutralize or defeat anthracnose disease that causes low production in onion industry in the Philippines. (Edmon B. Agron)

PHOTOS: wellpaperslibrary.com, markemania.com and gastronomy.wordpress

PHOTOS: RDELACRUZ & RALBERTO



Scientists identify two anthracnose pathogens attacking onions

Previously, *Colletotrichum gloeosporioides* was the only causal agent of anthracnose identified in onion. However, another causal agent called *Gibberella moniliformis* has been discovered.

This is the first report of two pathogens attacking onions at the same time said Dr. Ronaldo T. Alberto of the Central Luzon State University (CLSU) and Dr. Vermando M. Aquino of the UP Diliman National Institute of Molecular Biology and Biotechnology (UP-NIMBB) during the presentation of their research conducted under a research fellowship in agriculture and fisheries supported by the DA-BAR and the University of the Philippines Diliman-Natural Sciences Research Institute (UP-NSRI).

The study titled "Molecular characterization of *Colletotrichum gloeosporioides* and *Gibberella moniliformis* (anthracnose/twister disease) infecting onions in the Philippines" aims to characterize and identify the species of *Colletotrichum* causing the severe form of anthracnose in onion and to determine the sensitivity of anthracnose/twister pathogens to selected commercial fungicides.

Anthracnose/twister is a disease that causes white, oval, sunken spots on the leaves of onion at early vegetative stage. It also causes twisting and discoloration of the leaves resulting to elongated neck and slender bulbs. In severely infected onions, dark zonated

fungal structures and dieback symptoms appear leading to the collapse of the plants. In the past years, anthracnose seriously damage onions in Nueva Ecija (the biggest onion producer in the country) and neighboring onion-growing provinces in Luzon. The disease causes 80-100 percent yield loss, resulting to high prices and shortages in supply of onion in the market.

Given such scenario, the disease now poses a serious threat to the most indispensable culinary ingredient in the world and the most profitable single vegetable species in the Philippines after asparagus and tomato. In fact, onion now ranks as third among vegetables in area of production, fifth in both quantity and returns, and is considered as one of the country's top foreign exchange earners. However, in spite of the increase in areas planted, maximum production has not been attained. This is due to the proliferation of insect pests and diseases that continue to affect onion in almost all production areas in the country.

Currently, there is no effective management discovered yet to control the disease. As the *Gibberella moniliformis* is a facultative endophyte (living inside the plant) this makes it hard to control with fungicides. In any case, whether application of fungicide or other alternative management to control the disease, these may not be successful without a clear understanding of the nature of the

disease. According to Dr Alberto, different strains of the pathogen have different sensitivity responses to different fungicides and these differences in sensitivity response can cause a shift in pathogen's population structure.

In their study, infected onions were collected from different growing areas in Nueva Ecija, Pangasinan, Nueva Viscaya, Ilocos Sur and General Santos City. *Colletotrichum* species were isolated including an unidentified fungal species derived from leaves, neck and bulb of onions. These isolates were tested for its pathogenicity, morphologically analyzed and compared. In addition, pathogens' sensitivity to fungicides were also determined. Molecular tools such as DNA extraction, amplification, sequencing and phylogenetic analysis were used in the study.

Based on the comparison of DNA sequence to GenBank (an open access sequence database produced by National Centers of Biotechnology Information), the unidentified fungal species show high similarity with *Gibberella moniliformis* (synonym: *Gibberella fujikoroi*) - the causal organisms of bakanae disease of rice causing abnormally long and weak internodes and ear and stalk rot to maize. Thus, the conclusion is that the unidentified fungal species is

turn to page 8

Scientists identify... from page 9

Gibberella moniliformis. *Gibberella moniliformis* causes the elongation and twisting symptoms of onions while *Colletotrichum gloeosporioides* is responsible for anthracnose symptoms.

Aside from their distinctive characteristics, *Colletotrichum gloeosporioides* were easily recognized by its gray-white color while *Gibberella moniliformis* are pink in color. However, due to the limited number of